

Wisconsin Knowledge and Concepts Examinations
Criterion-Referenced Test

Mathematics Performance Levels

September 2006

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Mathematics Performance Levels

This document contains descriptions of what students in grades 3-8 and 10 are expected to know and be able to do in mathematics at each of the four state performance levels.

September 2006
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Mathematics Performance Levels

The Mathematics Performance Levels describe what students are expected to know and be able to do at each performance level – Advanced, Proficient, Basic, and Minimal Performance – on the mathematics portion of the Wisconsin Knowledge and Concepts Examinations – Criterion-Referenced Test (WKCE-CRT) at grades 3, 4, 5, 6, 7, 8, and 10. The performance level descriptions were created in June 2006 by a group of educators from around Wisconsin and content specialists from the Wisconsin Department of Public Instruction and CTB/McGraw-Hill, the WKCE-CRT developer. The descriptions are based on professional judgment, assessment data, the Assessment Framework for Mathematics, and ultimately on the February 2003 Standard Setting and the Wisconsin Model Academic Standards.

These performance level descriptions are *not exhaustive* but are intended to provide specific examples to help parents, educators, and others understand what children who score at a given performance level on the WKCE-CRT typically know and are able to do at the time of testing. This information may be useful as one component of program planning and evaluation, but should be interpreted cautiously and in the context of other available information when applied to individual students.

The descriptions are in order by grade level. This document is divided into three parts:

Brief Narrative Descriptions

These one-paragraph descriptions of each performance level may be most useful for those who simply want an overview of the knowledge and skills students typically demonstrate at each level.

Detailed Narrative Descriptions

These descriptions contain more detail but are still structured in a way that makes the information easy to grasp.

Elements of Performance Levels

The elements are descriptions of discrete knowledge and skills students typically demonstrate at each performance level. They complement the narratives by enumerating specific *examples* of knowledge and skills described in the narratives.

For information about these performance level descriptions please contact:

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Performance Level Descriptions:

Brief Narratives

Grade 3 Mathematics

The grade 3 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 two sets of pattern blocks and a ruler with 1/2 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: 452 and above

At the beginning of third grade, students performing at the Advanced level explain the step-by-step processes and reasoning used to solve problems. Students read and interpret number lines, determine the fractional part of a set and solve word problems using two and three-digit numbers. Students identify and compare three-dimensional figures, demonstrate an understanding of single motion geometry (flip), and describe the position of a point on a first quadrant coordinate grid. Students apply knowledge of measuring with standard and nonstandard units. They compare, contrast, and analyze data to draw reasonable conclusions and relate data from tables, bar graphs, and spinners to real-world situations. Students analyze numbers to determine patterns using addition or subtraction and identify missing numbers in an equation involving addition and subtraction.

Proficient

Score range: 407-451

At the beginning of third grade, students performing at the Proficient level explain each step of a process when solving a multi-step problem. Students apply place value concepts in two- and three-digit numbers and skip count by 2, 3, 5, 10, 25, and 100. They count coins up to one dollar and use dollar and cent signs to identify monetary amounts. Students identify three-dimensional figures, predict what shape will be formed when combining two-dimensional shapes, and plot a point on the first quadrant of a coordinate grid. Students measure objects to the nearest inch or centimeter, estimate length and determine standard and non-standard units for measuring objects. They read and compare digital and analog clocks to the nearest minute. They use data from tables, bar graphs, and spinners to draw conclusions. Students identify numbers as even or odd when working with sets of twenty or less objects. They may describe a rule that is used in a numeric or geometric pattern, identify a missing number in an addition equation, and understand the commutative property of addition (i.e., order of numbers does not affect the sum).

Basic

Score range: 392–406

At the beginning of third grade, students performing at the Basic level explain a portion of the steps required to solve multi-step problems. Students add and subtract whole numbers in everyday contexts, identify pictorial representations of a number or a fraction when represented as a part of a whole and limited to $\frac{1}{2}$. Students identify and count the sides of two-dimensional shapes, solve problems involving combining shapes, and locate a picture on the first quadrant of a coordinate grid. Students choose the appropriate unit for the measuring objects and events. Students read simple bar graphs, tables and grids to compare data and use phrases such as “least likely” and “most likely” to describe the likelihood of an event. Students recognize simple number patterns and determine missing numbers within a pattern.

Minimal Performance

Score range: 391 and below

At the beginning of third grade, students performing at the Minimal Performance level explain solutions in brief, simple ways. They order whole numbers, identify place values up to the tens, identify the number of items in a set, and estimate solutions to addition and subtraction problems. Students identify two-dimensional shapes and their attributes including vertices (corners), as well as shapes formed by combining two-dimensional shapes. They demonstrate some knowledge of locating a point on the first quadrant of a coordinate grid. Students may identify units of measure for measuring real-world items using both US customary and metric units on a ruler and estimate length to the nearest inch and using non-standard units. Students read simple pictographs and identify the likelihood of an event involving a simple spinner. Students recognize geometric patterns and determine a missing element in a pattern, demonstrate an understanding that the equal sign means “the same as,” including when the operation is to the right of the equal sign, and identify missing operations.

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.

Grade 5 Mathematics

The grade 5 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 ruler with 1/8 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: 505 and above

At the beginning of fifth grade, students performing at the Advanced level are able to justify mathematical processes used to solve problems that involve all four operations, including two-step problems involving equalities and inequalities. They represent fractions with pictures and add fractions with like denominators. Students compare and describe two and three-dimensional figures, identify parallel and perpendicular lines, and compare shapes with one or more lines of symmetry. They identify and describe plotted points on the first quadrant of a coordinate grid. Students convert within a system of measurement and determine area and perimeter. Students determine median, mode and range, and determine probability using data from a chart or table. Students describe and extend patterns including one and two-step numeric and geometric patterns.

Proficient

Score range: 463–504

At the beginning of fifth grade, students performing at the Proficient level defend the mathematical strategies used to solve one-step problems and use mathematical terminology to explain their thinking. Students use addition and subtraction with regrouping, as well as multiplication and division facts to solve two-step problems. They identify equivalent fractions and add and subtract fractions with common denominators. Students compare and identify perspectives of three-dimensional figures and plot points on the first quadrant of a coordinate grid. They select appropriate units and tools of measurement, measure to the nearest $\frac{1}{4}$ inch or centimeter, and convert within systems of measurement. Students determine area and perimeter of two-dimensional shapes, find the median, mode and range of a set of data, and determine probability using tables. They identify rules, extend numeric and geometric patterns, and use order of operations to solve two-step problems.

Basic

Score range: 445–462

At the beginning of fifth grade, students performing at the Basic level use some mathematical terminology to explain processes used to solve problems. Students solve problems using addition and subtraction with and without regrouping, as well as multiplication facts. They make change, round monetary amounts to the nearest dollar, and identify fractions of $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ represented in pictures. They identify attributes of two and three-dimensional figures, identify simple nets (flat patterns), and compose and decompose two-dimensional figures with pattern block shapes. Students read, interpret, and use tools of measurement to determine length, weight and temperature, measure to the nearest $\frac{1}{2}$ inch or centimeter, and describe the difference between perimeter and area. Students read and interpret simple bar graphs and design simple representations of probability. Students recognize and extend simple numeric and geometric patterns, and, without the use of a calculator, solve one-step multiplication and division equations with a missing variable. Students apply order of operations and use the commutative or associative property to solve problems with single digits.

Minimal Performance

Score range: 444 and below

At the beginning of fifth grade, students performing at the Minimal Performance level communicate simple mathematical ideas used to solve problems. Students read number lines, order numbers using place value concepts, translate word forms of numbers to numeric forms, and add monetary amounts. They construct two-dimensional figures by combining pattern block shapes and locate ordered pairs on a first quadrant coordinate grid. They read, interpret and use tools of measurement to the nearest inch or centimeter and may determine perimeter and area. They may read and interpret bar graphs. Students may be able to solve inequalities using single-digit addition and subtraction, use the commutative property of addition of single-digit numbers, and identify simple geometric and numeric patterns involving addition and subtraction.

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.

Grade 7 Mathematics

The grade 7 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: 555 and above

At the beginning of seventh grade, students performing at the Advanced level justify and clearly communicate mathematical problem solving strategies with detailed explanations. Students compare, order, add, and subtract decimals to the thousandth place, and solve problems using concepts of least common multiples and prime and composite numbers. Students apply proportional reasoning in context, calculate percentages, and convert between fractions and decimals with and without calculators. Students analyze three-dimensional figures, rotate simple geometric figures, and analyze and differentiate between similar and congruent shapes. Students use properties and relationships of quadrilaterals to determine area and perimeter. They measure angles of more than 90° , and estimate lengths to the nearest $\frac{1}{4}$ inch. They perform multi-step customary conversions for weight and distance with and without conversion tables and conversions for liquid capacity with a conversion table. They determine mean and mode, create stem-and-leaf plots, extract information from sets of data, and solve simulations involving probability. Students explain complex numerical sequences, solve two-step equations with whole number coefficients, and solve three-step algebraic problems involving order of operations.

Proficient

Score range: 504– 554

At the beginning of seventh grade, students performing at the Proficient level clearly communicate mathematical problem solving strategies and reason and connect mathematical problem solving strategies to real-world situations. Students solve problems involving place value up to the ten-thousandth place and to the hundredths place, including comparing and ordering decimals. Students predict rotations of figures on and off a grid. They determine distances on a map containing a scale and measure angles with a protractor. Students formulate a hypothesis based on information from a bar graph or circle graph, analyze information from data tables to state rules or to state a hypothesis based on data, predict the likelihood of an event, and

express probability as a fraction. Students use the associative property, commutative property, and order of operations to evaluate expressions and solve equations.

Basic

Score range: 480– 503

At the beginning of seventh grade, students performing at the Basic level use basic mathematical terminology, symbols or numbers to support their problem solving strategies. Students divide two-digit dividends by single-digit divisors, calculate cost using a calculator, and use addition and subtraction to solve problems involving monetary contexts. They identify attributes of three-dimensional figures and locate coordinates plotted on the first quadrant of a coordinate grid. Students select appropriate units of measurement, estimate length to the nearest unit, and determine area and perimeter. They create bar graphs from sets of information, interpret information in bar graphs and circle graphs, and determine the number of combinations when choosing four items. Students describe relationships between two variables, solve simple, one-step algebraic equations, and identify equivalent numerical expressions using the commutative and associative properties. They complete numeric patterns.

Minimal Performance

Score range: 479 and below

At the beginning of seventh grade, students performing at the Minimal Performance level communicate mathematical problem solving strategies used to solve simple problems and provide some detail using words and/or pictures in their explanations. Students may compare, order, add, and subtract whole numbers less than 100,000, solve simple word problems using addition, and use the commutative property for addition of single-digit numbers. Students identify attributes of three-dimensional shapes and congruent and similar figures. Students may perform conversions using the US customary system of measurement given a conversion table, and determine area and perimeter of simple quadrilaterals with the aid of a diagram. They may interpret information from a single bar graph and predict the outcome of simple events. Students may extend numeric patterns and describe algebraic equations in word form.

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.

Grade 10 Mathematics

The grade 10 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 calculators (scientific or graphing 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: 595 and above

At the beginning of tenth grade, students performing at the Advanced level convey mathematical ideas using the vocabulary of mathematics and provide detailed written communication about the reasonableness of their conclusions based upon calculations, models, and arguments using the Pythagorean Theorem, logical reasoning, and data analysis. Students analyze and solve problems using percents. Students classify geometric figures using properties and theorems, evaluate the validity of geometric figures using logical reasoning, apply properties of parallel lines, and locate intercepts of linear and quadratic equations with the use of a calculator. They describe transformations of figures and reflect geometric figures over any line of symmetry on a coordinate plane. Students calculate the value of an angle using multiple angle relationships and apply triangle congruence theorems. They analyze data and draw conclusions regarding the effects of outliers in a set of data, compare and analyze box-and-whisker plots, identify appropriate ranges of values using standard deviation, and calculate the probability or number of outcomes of an event. Students generalize patterns of various sequences, write linear equations when given two points, translate verbal problems into linear or quadratic equations without a calculator, and solve problems using algebraic methods.

Proficient

Score range: 541–594

At the beginning of tenth grade, students performing at the Proficient level provide justifications for their solutions and provide details to support their reasoning. Students solve a variety of problems using familiar percents. They apply angle relationships in a circle to solve problems and locate and plot coordinates of geometric figures transformed in a coordinate plane. Students use the Pythagorean Theorem and distance and mid-point formulas. They calculate the area of two-dimensional shapes. Students determine missing information using Venn diagrams, create scatter plots with appropriate scales and labels, and interpret the graph of quadratic relationships. They solve

multi-step linear and non-linear equations or inequalities, and determine and extend patterns involving real-world context.

Basic

Score range: 516–540

At the beginning of tenth grade, students performing at the Basic level represent processes in real-world situations and provide justifications for their solutions. They test and communicate the reasonableness of solutions. Students add, subtract, multiply, and divide integers. They identify similar geometric figures using ratios, recognize supplementary angle relationships, and determine the missing length of a right triangle. Students approximate linear and area measurements. They analyze the relationship between linear and non-linear sets of data, select appropriate sample sets for surveys, calculate the probability of a single event, and predict values beyond the range of a linear graph. Students describe relationships among variable quantities, translate real-world data into algebraic equations with two variables, and determine the slope of a line. They translate verbal expressions into algebraic expressions and demonstrate the use of algebraic properties to solve multiple-step linear equalities and inequalities.

Minimal Performance

Score range: 515 and below

At the beginning of tenth grade, students performing at the Minimal Performance level use simple explanations to support their conclusions. Students order real numbers and add and subtract decimals without the use of calculators. Students classify two and three-dimensional figures, identify corresponding parts of congruent figures, and determine the location of more than one ordered pair using the four quadrant coordinate system. Students select appropriate units of measurement, convert within US customary or metric systems of measure, use appropriate tools and techniques to measure to the nearest unit, and estimate area. Students interpret data from tables and linear graphs, including constant functions; determine mean, median, mode and range of a set of data; and predict the likelihood of a single event. Students apply associative, commutative, or distributive properties to solve multi-step algebraic equations.

Performance Level
Descriptions:

Detailed Narratives

Grade 3 Mathematics

The grade 3 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 two sets of pattern blocks and a ruler with 1/2 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 non-routine mathematical problems. Each proficiency level presumes mastery at previous levels.

Advanced (452 and above)

At the beginning of third grade, students performing at the Advanced level use mathematical terminology or symbols to explain step-by-step strategies and reasoning and extend their explanations using a variety of methods to explain solutions. Students read and interpret number lines, determine the fractional part of a set and solve word problems using two and three-digit numbers. Students use grade appropriate mathematical vocabulary to identify and compare attributes of three-dimensional figures, demonstrate an understanding of the result of a flip of an everyday object and describe the position of a point on a first quadrant coordinate grid using letter, number coordinates. Students apply knowledge of measuring with standard and nonstandard units by measuring and comparing everyday objects. They compare, contrast, and analyze data to draw reasonable conclusions, and extend their mathematical knowledge to relate data from tables, bar graphs and spinners to real-world situations. Students analyze a table of number pairs to determine the pattern of change using addition or subtraction. (e.g. What's My Rule?), use number relationships to identify missing numbers on either side of the equal sign when using the operations of addition and subtraction, and recognize the operational relationships between addition and subtraction.

Proficient (407-451)

At the beginning of third grade, students performing at the Proficient level explain each step of a process using specific mathematical language when solving a multi-step problem. Students apply place value concepts in two- and three-digit numbers and skip count by 2, 3, 5, 10, 25, and 100; analyze and evaluate word problems to formulate solutions when working with one and two-digit numbers involving addition, subtraction or multiplication; and count coins up to one dollar and use dollar and cent signs to identify monetary amounts, represented by pictures. Students identify three-dimensional figures,

predict what shape will be formed when combining two-dimensional congruent shapes, and use letter/number coordinates to plot points on a first quadrant coordinate grid. Students measure real-world objects to the nearest inch or centimeter, estimate length, and determine reasonable standard and non-standard units for measuring everyday objects. They read and compare digital and analog clocks to the nearest minute. Students use data from tables, bar graphs, and spinners with unequal parts to draw conclusions. They identify numbers as even or odd when working with sets of twenty or less objects, describe a rule that is used in numeric or geometric patterns, and identify a missing number in an addition equation and apply their understanding of the commutative property of addition (e.g. the order of numbers does not affect the sum).

Basic
(392 – 406)

At the beginning of third grade, students performing at the Basic level use words, numbers or pictures to give partial explanations or explain a portion of the steps required to solve multi-step problems. Students add and subtract whole numbers in everyday situations. They identify place values up to hundreds when given a pictorial representation of a number and recognize a pictorial representation of a fraction when represented as a part of a whole, limited to $\frac{1}{2}$. Students identify and count the sides of two-dimensional shapes, visualize the results of combining two-dimensional shapes, and use letter/number coordinates to locate a picture on a first quadrant coordinate grid. Students choose the appropriate unit for measuring real-world objects and events. Students read simple bar graphs, tables and grids to compare data and use vocabulary such as “least likely” and “most likely” to describe the likelihood of an event. Students recognize simple number patterns and determine missing numbers within the pattern. They determine missing numbers in operations and demonstrate an understanding that the equal sign means “the same as” when the missing number is on either side of the equal sign.

Minimal Performance
(391 and below)

At the beginning of third grade, students performing at the Minimal Performance level explain solutions in brief simple ways. Students order whole numbers, identify place values up to the tens, identify a number of items in an array or set by using basic skills such as counting, and estimate sums and differences. Students identify two-dimensional shapes and their attributes including vertices (corners) and shapes formed by combining other two-dimensional shapes. They demonstrate some knowledge of locating a point on the first quadrant of a coordinate grid using simple letter, number coordinates (A, 3). Students may identify units of measure to measure real-world items using US customary and metric units on a ruler, estimate length to the nearest inch, and use non-standard units to estimate length. Students may read simple pictographs where the key represents one object and

identify the likelihood of a simple event involving a spinner. Students may recognize simple geometric patterns, determine a missing element in a pattern, demonstrate an understanding that the equal sign means “the same as” even if the operation is to the right of the equal sign, and identify missing operations.

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 non routine mathematical problems. Each proficiency level presumes mastery at previous levels.

Advanced (484 and above)

At the beginning of the fourth grade, students performing at the Advanced level clearly communicate mathematical ideas by providing a plan of action and explanations that include mathematical reasoning. Students apply place value concepts to identify numbers with specific attributes such as the largest number, identify number sentences that show how to use addition or subtraction to solve real-life problems, and apply operations of computation, representing multiplication as repeated addition or arrays and representing division as repeated subtraction or sharing. Students solve problems involving single motion geometry (slide, flip or rotation), locate, plot and connect points given the coordinates on the first quadrant of a coordinate grid, and explain the movement of an object in the first quadrant coordinate grid. Students determine area and perimeter of two-dimensional shapes, differentiate between US customary and metric units of measurement, and compare and convert lengths between inches, feet and yards. They analyze information from pictographs where the symbol in the key represents more than one object, predict outcomes using mathematical vocabulary related to probability, and determine the probability of events using coins or spinners that are divided into equal or unequal sections. Students extend a number pattern in a table by determining the addition or subtraction rule being used.

Proficient (438-483)

At the beginning of fourth grade, students performing at the Proficient level communicate mathematical ideas using written, numerical and symbolic reasoning. They apply place value concepts to order four-digit numbers, solve two-step problems using addition and subtraction, solve one-step real-world problems using basic multiplication facts, and identify a fractional part of a set. Students compare two-dimensional shapes, predict the results of transformations involving a slide, a flip or a turn, and locate and plot

points on the first quadrant coordinate grid. Students measure real-world objects using US customary and metric measurements, estimate measurement with non-standard units, and read analog and digital clocks to the nearest minute. Students identify bar graphs that display identical information represented by tally charts and use terms such as “most often” when comparing data. They extend numeric patterns by a few steps, recreate patterns from rules in a given pattern and find a missing variable to balance a simple equation

Basic
(421-437)

At the beginning of fourth grade, students performing at the Basic level provide brief explanations for how they solve problems. They match numbers in word, numeric and expanded form, identify two-digit 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 in a first-quadrant coordinate grid. Students measure (to the nearest $\frac{1}{2}$ inch) and compare the length and weight of objects, find the area of simple shapes drawn on grids, and read and compare analog and digital clocks 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 with several missing steps, determine the rule used in a pattern, determine the missing number in a subtraction equation with the unknown to the right of the equal sign, and find the missing addend in an equation with two-digit numbers.

Minimal Performance
(420 and below)

At the beginning of fourth grade, students performing at the Minimal level provide simple explanations of how they solve problems. Students apply basic knowledge of place valued to solve two and three-digit addition problems and use addition and subtraction to solve one-step problems in real-world situations. Students identify two-dimensional shapes when given an attribute, match congruent figures using single-motion geometry (slide), and locate an object on a first quadrant coordinate grid when given the coordinates (letter, number). Students identify appropriate units for measuring objects, measure real-world objects to the nearest inch, and compare objects using terms such as longer or shorter. They read analog and digital clocks to the nearest hour and thermometers to the nearest five degrees. Students interpret data from simple bar graphs and distinguish between situations (e.g. spinners) that give equal or unequal chances. Students extend simple numeric patterns, solve addition equations with one missing variable and may identify equations that are correct or incorrect.

Grade 5 Mathematics

The grade 5 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 ruler with 1/8 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 (505 and above)

At the beginning of fifth grade, students performing at the Advanced level solve, justify and communicate mathematical ideas and details using pictures, words and symbols. Students use the four basic operations to solve two-step problems involving equalities and inequalities, demonstrate facility with multiplication facts and solve real-world problems with US currency in real-world situations. They represent fractions with pictures and add fractions with like denominators. Students compare and describe attributes of two and three-dimensional figures, identify parallel and perpendicular lines, and compare shapes with one or more lines of symmetry. They identify and describe plotted points on a first quadrant coordinate grid. Students use appropriate units of measure to the nearest $\frac{1}{4}$ inch or centimeter, estimate length through observation and direct measurement, convert within a system of measurement, and determine area and perimeter. Students determine median, mode and range, and probability using data from charts and tables. Students describe and extend one and two-step numeric and geometric patterns, and demonstrate understanding of equalities and inequalities using $<$, $>$ and $=$ when solving one-step problems.

Proficient (463-504)

At the beginning of fifth grade, students performing at the Proficient level defend the mathematical strategies used to solve one-step problems and use mathematical terminology to explain their thinking using words, pictures, numbers and symbols. Students solve number sentences using addition and subtraction with regrouping, as well as basic multiplication and division facts. They identify multiples of a number and equivalent fractions, add and subtract fractions with common denominators, and calculate change using US currency. Students compare attributes of three-dimensional figures and plot points on a first quadrant coordinate grid. They select appropriate units and tools of measurement, measure to the nearest $\frac{1}{4}$ inch or centimeter, convert within a system of measurement, and determine

area and perimeter of two-dimensional figures. Students find median, mode and range of a set of data and determine probability using tables. Students identify rules to extend numeric and geometric patterns involving one and two-step problems, and use order of operations to solve two-step problems.

Basic
(445-462)

At the beginning of fifth grade, students performing at the Basic level communicate simple mathematical ideas by using mathematical terminology to explain their reasoning. Students solve basic addition and subtraction number sentences with and without regrouping, use basic multiplication facts to solve real-world problems, and make change and round money to the nearest dollar. They identify fractions of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ represented with pictures. Students identify attributes of three-dimensional shapes using terms such as face, edge vertex and base; compose and decompose two dimensional figures with pattern block shapes; and identify simple nets (flat patterns). Students read, interpret and use tools of measurement to determine length (to the nearest $\frac{1}{2}$ inch or centimeter), weight and temperature. They describe the difference between perimeter and area. Students read and interpret simple bar graphs and may design simple representations of probability. Students recognize and extend simple numeric and geometric patterns and, without the use of a calculator, solve simple one-step multiplication and division equations with one missing variable. They may use the associative and commutative properties and order of operations to solve problems with single digits.

Minimal Performance
(444 and below)

At the beginning of fifth grade, students performing at the Minimal Performance level communicate simple mathematical ideas using numbers and pictures in their explanations. Students read number lines to locate points, order numbers from least to greatest using place value, translate word forms to numeric forms, and add monetary amounts. Students construct simple two-dimensional figures by combining pattern block shapes, and may be able to locate ordered pairs on a first quadrant coordinate grid. They may read, interpret and use tools of measurement to the nearest inch or centimeter, and determine area and perimeter. They may read and interpret bar graphs. Students may identify simple geometric and numeric patterns involving addition and subtraction, solve inequalities using single-digit addition and subtraction, and use the commutative property of addition with single digit numbers.

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 (532 and above)

At the beginning of sixth grade, students performing at the Advanced level communicate mathematical ideas using correct vocabulary and terminology, and connect mathematical processes to real-world situations. They analyze real-world problems to obtain relevant information necessary for deriving and explaining strategies used to solve two-step problems. Students analyze and solve multiple step problems with whole numbers, add and simplify fractions with unlike denominators, and identify equivalent fractions, decimals and percents. Students identify types of angles in geometric shapes, analyze and apply concepts of symmetry, and determine coordinates of missing vertices. Students convert within a system of measurement and calculate elapsed time. They find mean, median, mode and range from data displayed in complex graphs, charts and number sets, and determine the probability of outcomes of an event. They use reasoning and logic to find patterns, translate geometric patterns into numeric 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 one variable.

Proficient (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 within context and compare and order whole numbers, fractions, decimals and percents. Students describe angles using appropriate attributes, compare nets (flat patterns) to corresponding three-dimensional shapes, and identify, locate and name ordered pairs for vertices of geometric shapes located on the first quadrant of a coordinate grid. Students measure everyday objects to the nearest 1/8 inch or

millimeter, convert minutes to seconds, and calculate area in real-world situations. 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 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 in context.

Basic
(464-484)

At the beginning of sixth grade, students performing at the Basic level communicate mathematical ideas involved in single-step problems using numbers, basic symbols and limited mathematical terminology. Students recognize place values for whole numbers to the ten thousands place, use basic multiplication and division facts to solve real-world 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 a first quadrant coordinate grid. Students read simple scales to identify the weight of objects and convert liquid capacity within US customary units. Students draw simple conclusions from data displayed in bar graphs, tables and number sets; identify the mode and range of a limited set of numbers; and determine the probability of simple events. Students identify consecutive missing terms in numeric patterns and solve equations using order of operations with parenthesis.

Minimal Performance
(463 and below)

At the beginning of sixth grade, students performing at the Minimal Performance level communicate mathematical ideas and problem solving strategies with some details. Students use place value to express four-digit numbers in expanded notations, solve three and four-digit addition and subtraction problems, and use basic facts to solve multiplication and division problems without a calculator. Students may identify angles, polygons and lines of symmetry, as well as the x- and y-axis on a coordinate grid. Students may convert within the US customary system of measurement using a conversion table. Students may find simple information displayed in graphs, charts and number sets, and determine probable outcomes using terms such as likely, equally likely, least likely and most likely. Students may extend simple numeric or geometric patterns and solve equations with single digits using the commutative property of multiplication.

Grade 7 Mathematics

The grade 7 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 (555 and above)

At the beginning of seventh grade, students performing at the Advanced level justify and clearly communicate mathematical problem solving strategies with detailed explanations using words, numbers and symbols. They reason, connect and represent mathematical processes in real-world situations. Students compare, order, add and subtract decimals to the thousandth place, and solve problems using concepts of least common multiple and prime and composite numbers. They apply proportional reasoning in context, calculate percentage, and convert between fractions and decimals with and without a calculator. Students analyze attributes of three-dimensional figures, rotate simple geometric shapes, and differentiate between similar and congruent shapes. They use properties and relationships of quadrilaterals to determine area and perimeter, and use ordered pairs to locate points on the first quadrant of a coordinate grid. Students measure angles of more than 90° , estimate lengths to the nearest $\frac{1}{4}$ inch, and perform multi-step conversions for distance and weight with and without conversion tables. They perform conversions for liquid capacity with a conversion table. Students determine mean and mode with an odd numbered set of data within context; create stem-and-leaf plots; extract information in a given context; and solve simulations involving probability. Students explain complex numerical sequences using pictures and numbers, solve two-step equations with whole number coefficients, and solve three-step algebraic problems involving order of operations.

Proficient (504-554)

At the beginning of seventh grade, students performing at the Proficient level connect problem solving strategies to real-world problems and clearly communicate their strategies and reasoning by providing details using mathematical terminology, words and symbols. Students estimate sums of six-digit numbers and demonstrate knowledge of decimal place value up to the ten-thousandths place by comparing and ordering decimals. Students predict rotation of figures

on and off a grid and identify plotted points on the first quadrant coordinate grid. Students determine the distance between two points on a map with a scale and use a protractor to measure angles. Students analyze information from data tables and graphs to state rules and formulate hypotheses, express probability in fractional form, and predict the likelihood of an independent event presented in real-world contexts. Students use the associative property, commutative property, and order of operations to evaluate expressions and solve equations.

Basic
(480-503)

At the beginning of seventh grade, students performing at the Basic level use basic mathematical terminology, symbols or numbers to communicate strategies used to solve multi-step problems and support their problem solving strategies. Students divide two-digit dividends by single-digit divisors, determine cost using a calculator, and use addition and subtraction to problems involving monetary contexts. Students identify congruent and similar figures, identify attributes of three-dimensional shapes, and locate x and y-numbered coordinates plotted on the first quadrant of a coordinate grid. Students select appropriate units of measure, estimate length to the nearest unit, and solve simple real-world problems with area and perimeter. They create single bar graphs from sets of information, extract information from single bar graphs, and interpret data presented in circle graphs with and without context. They determine the number of combinations when choosing for items. Students describe relationships between two variables, solve simple one-step algebraic equations, and identify equivalent numerical expressions using the commutative and associative properties. They complete numeric patterns.

Minimal Performance
(479 and below)

At the beginning of seventh grade, students performing at the Minimal Performance level communicate mathematical problem solving strategies by providing some details with brief, supporting information. Students may compare, order, add and subtract numbers less than 100,000, and use the commutative property of addition to solve simple word problems with single-digit numbers. Students identify attributes of three-dimensional shapes (e.g. face, side, edge, base) and simple congruent and similar figures. They perform simple conversions using the US customary system of measurement given a conversion table, and they determine area and perimeter of simple quadrilaterals. Students interpret information from a single bar graph and predict the outcome of simple events. Students may extend numeric patterns and describe algebraic equations in word form.

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
(573 and above)

At the beginning of eighth grade, students performing at the Advanced level formulate mathematical representations and communicate and justify mathematical ideas clearly and concisely in written form. Students calculate discounts and sales tax using fractions and percents, estimate products of decimals to the nearest whole number, find the least common multiple of numbers, and identify equivalent forms for fractions, decimals and percents. Students name three-dimensional figures using correct terminology, break polygons into triangles, solve for the sum of angles in a polygon, and apply proportional reasoning to solve problems related to similar geometric figures. They use understanding of transformational geometry to locate or plot geometric shapes in any of the four quadrants of a coordinate plane. Students use and convert between US customary and metric units of measure; 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 unordered data and analyze data from various graphs, including circle graphs. They estimate the probability of an outcome not occurring and determine the number of combinations in a set. Students extend numeric patterns in sequences or functional relationships using multiplication and exponents without a calculator, represent numerical patterns with algebraic expressions, and apply the distributive property to solve real-world problems.

Proficient
(513-572)

At the beginning of eighth grade, students performing at the Proficient level clearly communicate mathematical processes and explain ideas and reasoning using mathematical terminology, numbers, symbols, graphs and diagrams. Students add and subtract mixed numbers and fractions with unlike denominators, multiply mixed numbers in real-world contexts, compare percents and fractions, and use percents in simple real-world problems. Students use proportional

reasoning to find the length of sides of similar figures and determine supplementary and complementary angles. They locate and plot coordinates of a transformation in any of the four quadrants of a coordinate plane. Students use appropriate tools of measurement to measure the distance between two points to the nearest $\frac{1}{8}$ inch or millimeter, solve problems involving area, perimeter and circumference, and find the volume of rectangular prisms. Students interpret and compare data contained in double bar graphs and determine the probability of one or two dependent or independent events. Students extend functional relationships, solve algebraic equations with like terms without a calculator, and evaluate algebraic expressions with exponents.

Basic
(483-512)

At the beginning of eighth grade, students performing at the Basic level use basic mathematical terminology, symbols or numbers to explain and support their problem solving strategies. Students recognize and apply place value concepts, and estimate the sum and difference of whole numbers, common fractions and mixed numbers in problem-solving situations without the use of a calculator. Students determine measurements of complementary angles and congruency between multiple figures. They identify, locate and plot coordinates of a transformation for a point across the x-axis or y-axis. Students select appropriate tools to measure to the nearest $\frac{1}{4}$ inch or millimeter, measure liquid capacity and measure angles up to 90° . Students read bar graphs, interpret scales, and extract and interpret data from linear graphs when solving real-world problems. Students determine the probability of events based on one independent event and the number of combinations in a given set of data. Students find missing terms in sequences and functional relationships without a calculator, apply the rules for order of operations, and evaluate algebraic expressions containing two operations. They use commutative and associative properties to solve problems.

Minimal Performance
(482 and below)

At the beginning of eighth grade, students performing at the Minimal Performance level communicate mathematical processes used to solve simple problems by providing limited details with some supporting information using words or pictures in their explanations. They identify equivalent forms of fractions, decimals and percents without the use of calculators, and estimate sums and differences of whole numbers and common fractions in problem-solving situations. Students classify angles as acute, obtuse or right, describe the attributes of similar geometric figures, and identify and locate coordinates in all four quadrants of a coordinate plane. They use appropriate US customary and metric tools to estimate and measure distances between points 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 may extend numeric and geometric patterns, apply the commutative and associative properties, and evaluate and solve one-step algebraic equations without a calculator.

Grade 10 Mathematics

The grade 10 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 Relationship, 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 calculators (scientific or graphing 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 (595 and above)

At the beginning of tenth grade, students performing at the Advanced level convey mathematical ideas using the vocabulary of mathematics by providing detailed written communication about the reasonableness of their conclusions based upon calculations, models, arguments, the Pythagorean Theorem, logical reasoning and data analysis. Students use reasoning and logic to explain the validity of conclusions, determine extraneous information in problems, and verify and explain mathematical conjectures. They analyze and solve problems using percents by applying proportional reasoning. Students describe transformations of complex figures, and reflect geometric figures over any line of symmetry on a coordinate plane. They classify geometric figures using properties and theorems, evaluate the validity of geometric statements using logical reasoning and analyze geometric relationships on two-dimensional coordinate systems. Students apply properties of parallel lines and locate intercepts of linear and quadratic equations without a calculator. They convert between multiple units of measurement in mathematical and real-world contexts, calculate the value of an angle using angle relationships, and apply triangle congruence theorems. Students use measuring tools to solve multi-step problems and determine the areas of two and three-dimensional figures. Students apply the Pythagorean Theorem to solve problems and use midpoint and distance formulas in mathematical and real-world contexts. Students draw conclusions regarding the effects of outliers in a set of data, create scatter plots with appropriate scales and labels, and analyze the data. They compare and analyze box-and-whisker plots, identify appropriate ranges of values using standard deviation and calculate the probability or number of outcomes of an event with or without replacement using the fundamental counting principles. Students generalize patterns of various sequences, write linear equations when given the coordinates of two points, translate verbal problems into linear or quadratic equations, and solve problems using algebraic methods.

Proficient
(541-594)

At the beginning of tenth grade, students performing at the Proficient level convey mathematical ideas in a variety of ways and provide justifications and details to support their solutions and reasoning. Students solve a variety of problems using familiar percents. They locate and plot coordinates of geometric figures transformed in a coordinate plane and apply angle relationships in a circle to solve real-world problems. Students use the Pythagorean Theorem and distance and mid-point formulas. They convert between units of measurement, apply tools of measurement to solve problems, and calculate the area of two-dimensional shapes. Students determine missing information using Venn diagrams, create scatter plots with appropriate scales and labels, and interpret the graph of quadratic relationships between two real-world quantities. They solve multi-step linear and non-linear equations and inequalities. They determine and extend patterns involving real-world contexts.

Basic
(516 – 540)

At the beginning of tenth grade, students performing at the Basic level identify information necessary to solve real-world problems, represent mathematical ideas in real-world situations, provide justification, and test and communicate the reasonableness of solutions. Students add, subtract, multiply and divide integers and use appropriate properties when solving problems. They identify similar geometric figures using ratios, recognize supplementary angle relationships, and determine the missing length of a right triangle. Students select and use appropriate tools of measure, approximate linear and area measurements, and convert between US customary and metric systems. Students analyze the relationship between graphic representations of two sets of real-world linear and non-linear data; select appropriate sample sets for surveys; calculate probability for a single event; and predict values beyond the range of a linear graph. Students describe relationships among variable quantities; translate real-world data into algebraic equations with two variables; and determine slope of a line. They translate verbal expressions into algebraic expressions with one variable and demonstrate the use of algebraic properties to solve multi-step linear equalities and inequalities.

Minimal Performance
(515 and below)

At the beginning of tenth grade, students performing at the Minimal Performance level use simple explanations to support their conclusions. Students order real numbers, and add and subtract decimals without the use of a calculator. Students classify two and three-dimensional figures, identify corresponding parts of congruent figures, and determine the location of ordered pairs in a four-quadrant coordinate system. Students select appropriate units of measurement,

convert within US customary or metric systems, use appropriate tools and techniques to measure to the nearest unit, and estimate area when given a reference. Students interpret data from tables and linear graphs, including constant functions; determine mean, median, mode and range of an even or odd set of data; and predict the likelihood of a single event. Students apply associative, commutative or distributive properties to solve multi-step algebraic equations.

Performance Level Descriptions:

Elements

Grade 3 Mathematics

The grade 3 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 two sets of pattern blocks and a ruler with ½ 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. *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
<p>Advanced</p> <p>452 and above</p>	<p>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:</p> <ul style="list-style-type: none"> • using a variety of methods to clearly communicate the step-by-step mathematical strategies and reasoning used to solve problems. • reading and interpreting number lines to solve problems. • estimating involving two- and three-digit addends to solve real-world problems. • determining a fractional part of a set. • using basic geometric terminology to identify and compare attributes of three-dimensional figures. • describing position of a point on a first quadrant coordinate grid using coordinates of letters and numbers. • identifying appropriate units of measurements (US customary and metric). • measuring and comparing objects using non-standard units. • comparing, contrasting and analyzing data from tables, bar graphs, and spinners to draw reasonable conclusions. • identifying and predicting the results of flipping every day objects. • determining the rule used in a function table, number pattern. • using number relationships, students identify a missing number in an equation when the missing number is to the left or the right of the equal sign.. • determining operations and equations to solve real-world problems. • recognizing inverse relationships of addition and subtraction. • solving for variables using the commutative property of addition.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
Proficient 407 –451	<p>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:</p> <ul style="list-style-type: none"> • using specific mathematical language to explain each step used to solve a multi-step problem. • applying place value concepts in two- and three-digit numbers. • solving problems using skip counting of two- and three-digit numbers. • analyzing and evaluating word problems to formulate solutions when working with one-and two-digit numbers involving addition, subtraction or multiplication. • analyzing and evaluating word problems to formulate solutions when working with one- digit numbers involving multiplication. • estimating involving the addition of multiple addends using two- and three-digits. • counting coins up to one dollar and translating pictures of coins into cents and dollars. • predicting the outcome of combining two-dimensional congruent shapes. • measuring real-world objects to the nearest inch or centimeter. • estimating lengths using standard and non-standard units. • determining the area of squares and rectangles when on a grid of square units. • reading and comparing digital and analog clocks to the nearest minute. • extracting information from tables, bar graphs, and simple spinners to draw conclusions and to solve problems. • classifying numbers as even or odd when working with sets of twenty or less objects. • describing the rule to a numeric pattern.
Basic 392 –406	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • explaining a portion of the steps required to solve a multi-step problem. • using words, numbers or pictures to explain the steps used to find solutions. • adding and subtracting whole numbers in everyday situations. • recognizing numbers represented in word, pictorial and numeric forms. • recognizing fractions in pictorial forms limited to $\frac{1}{2}$. • identifying the number of sides on a two-dimensional figure. • predicting the results of combining two-dimensional shapes. • identifying and naming a point on the first quadrant of a coordinate grid. • choosing the appropriate units of measurement for measuring length when limited to inches, feet, yards, centimeters and meters and for measuring time and temperature. • comparing data in a simple bar graph, table or chart. • using terms less, more, least, and most when working with data.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • recognizing and extending missing terms within a numeric pattern. • determining a missing number in a simple equation.
<p>Minimal Performance</p> <p>391 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • explaining solutions in brief simple ways. • ordering whole numbers. • identifying place value up to the tens. • using basic skills such as counting to determine a number of items in an array or set. • estimating involving addition and subtraction. • identifying two-dimensional shapes. • identifying the number of vertices (corners) on a two-dimensional shape. • demonstrating movement on a first quadrant coordinate grid. • locating a point on a first quadrant coordinate grid when given the ordered pair (letter, number). • composing two-dimensional shapes from small two-dimensional shapes. • identifying US customary and metric rulers and appropriate units of measure for measuring real-world objects. • estimating length to the nearest unit using non-standard units. • reading pictographs when the key represents one object. • identifying the likelihood of an event involving simple spinners. • extending geometric patterns to the next step. • identifying a missing symbol (+, -, x, =) from a simple equation. • identifying correct equations when the operations are on the right side of the equation.

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 $\frac{1}{4}$ 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. *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 484 and above	<p>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:</p> <ul style="list-style-type: none"> • Providing clear and detailed explanations supporting mathematical ideas used to solve real-world problems. • identifying and applying place value concepts to problem solving situations. • solving problems involving estimation, arrays and fractions of sets by applying operations (+, −, ×, ÷). • applying concepts of multiplication as repeated addition or division as repeated subtraction. • identifying and discriminating between objects that have experienced single-motion geometry (slide, flip, and rotation). • locating, plotting and connecting points given the coordinates on the first quadrant of a coordinate grid. • explaining the results with the slide of an object in a first quadrant coordinate system. • determining area and perimeter of two-dimensional shapes. • differentiating between US customary and metric units of measurement. • comparing units of length using US customary or metric units of measurement. • converting units within the US customary system of measurement. • analyzing tables to find the functional relationship. • predicting the likelihood of simple events including coins or spinners. • extending numerical patterns by several steps using addition and subtraction. • analyzing and comparing data in pictographs where the symbol in the key represents more than one.
Proficient 438 – 483	<p>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:</p> <ul style="list-style-type: none"> • communicating mathematical ideas to solve real-world problems using words, numbers or symbols. • applying place value concepts to sequential ordering of whole numbers. • solving real-world one-step problems involving multiplication. • comparing attributes of two-dimensional figures.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • predicting the results of combining two-dimensional figures. • explaining how an object on a first quadrant coordinate grid can be moved from one location to another. • reading and interpreting instruments of measurement involving US customary and metric units. • reading analog and digital clocks to the nearest minute. • estimating the measurement of objects using non-standard units. • identifying the same set of data displayed in different types of graphs and charts. • using and comparing data from tally charts and bar graphs. • interpreting a data table to determine occurrence of an event (e.g. most often) • predicting the likelihood of events involving spinners divided into unequal sections. • representing an addition equation with a pictorial representation. • evaluating a real-world problem to determine the appropriate equation needed to solve the problem. • finding equivalent equations using basic facts.
<p>Basic 421 – 437</p>	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • providing brief explanations about the mathematical ideas required to solve real-world problems. • using place value concepts to recognize numbers in word form and expanded notation. • using computation or estimation to solve real-world problems involving multiple digit addition and subtraction of whole numbers. • determining the number of sides, faces, edges, vertices (corners) of two-dimensional figures. • manipulating two-dimensional figures involving single motion geometry (slide, flip and turn). • creating two-dimensional figures by combining figures. • identifying a 3-dimensional geometric shape when given its net (flat pattern). • determining the coordinates of a point on a first quadrant coordinate grid. • identifying and applying appropriate US customary and metric units for measuring real-world objects. • reading and interpreting rulers using customary units to identify lengths of everyday objects. • determining the area in square units of a shape placed on a grid. • measuring horizontal and vertical lengths to the nearest half inch. • determining the difference between the measurements of two objects. • reading and using data found in bar graphs where the scale jumps by two. • comparing spinners that give equal or unequal chances. • identifying a two-digit odd number. • finding the missing steps in a geometric pattern. • identifying rules used to extend a numeric pattern involving skip counting. • finding the missing addend for an equation involving two-digit addends.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
Minimal Performance 420 and below	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • explaining mathematical ideas required to solve simple one-step real-world problems. • identifying and applying a basic knowledge of place value. • solving addition problems involving double-digit and triple-digit addends. • identifying a two-dimensional figure when given an attribute. • matching congruent figures involving single motion geometry (slide only). • locating a point (ordered pair) on the first quadrant coordinate grid when given the coordinates. • identifying appropriate US customary units to use when measuring real-world objects. • measuring horizontal and vertical lengths to the nearest inch. • reading and interpreting analog and digital clocks to the nearest hour. • reading thermometers to the nearest 5 degrees. • comparing objects using terminology of longer, shorter, and taller. • reading data from simple bar graph. • distinguishing between spinners that give equal or unequal chances. • extending simple numeric patterns. • solving equations with one missing variable when the solution involves addition of one to any number.

Grade 5 Mathematics

The grade 5 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 ruler with 1/8 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
<p>Advanced</p> <p>505 and above</p>	<p>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:</p> <ul style="list-style-type: none"> • justifying mathematical ideas used to solve real-world word problems using pictures, words or symbols. • adding and subtracting with and without regrouping. • demonstrating fluency of basic multiplication facts. • determining operations to use when working with US currency in real-world situations. • identifying equivalent fractions. • adding fractions with common denominators with and without context. • comparing shapes with one or more lines of symmetry. • comparing and describing attributes of two- and three-dimensional figures. • discriminating between parallel and perpendicular lines. • connecting a series of plotted points on a first quadrant coordinate grid. • decomposing two-dimensional figures. • identifying the net (flat pattern) of three-dimensional shapes when given the shapes attributes. • identifying appropriate units of measurement involving liquid capacity. • using appropriate tools to measure to the nearest ¼ inch and centimeter. • estimating length through direct observations and direct measurement. • converting within a system of measurement (US customary or metric). • using formulas for perimeter and area. • identifying median, range and mode of a given set of data. • predicting the probability of events using tables. • extending one- and two-step numeric and geometric patterns. • solving inequalities when computing with digit-numbers.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
<p>Proficient</p> <p>463 –504</p>	<p>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:</p> <ul style="list-style-type: none"> • communicating clearly and with some detail the mathematical ideas used to solve a one-step real-world problem.. • solving addition and subtraction problems with regrouping. • solving multiplication and division of basic facts. • identifying multiples of a number. • identifying equivalent fractions. • adding and subtracting fractions with common denominators. • calculating change with US currency. • identifying and comparing attributes of three-dimensional figures using terms such as faces, edges, vertices (corners), and bases. • identifying three-dimensional figures from various perspectives. • plotting a set of points on a first quadrant coordinate grid. • using appropriate units and tools of measure to the nearest $\frac{1}{4}$ inch or centimeter. • reading Fahrenheit and Celsius thermometers to the nearest 5 degrees. • converting within the US customary and metric systems of measurement. • applying formulas for perimeter and area of two-dimensional shapes. • identifying median, range and mode of a set of data. • determining how to collect a specific set of data. • identifying likelihood of events expressed in a table. • solving two-step equations involving order of operations. • Finding the missing number of a numeric pattern. • Describing a geometric pattern in a new way.
<p>Basic</p> <p>445 –462</p>	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • communicating mathematical ideas used to solve real-world problems using some mathematical terminology to explain solutions. • order numbers from least to greatest. • identifying points on a number line. • solve basic addition and subtraction equations with and without regrouping. • solving real-world problems involving estimated cost, total cost and making change. • combining pattern blocks to create new figures. • identifying attributes of three-dimensional figures using faces, edges, vertices (corners) and bases. • plotting points on a first quadrant coordinate grid. • analyzing first quadrant coordinate grids for accuracy of plotted points. • reading, interpreting and using appropriate tools of measurement to the nearest $\frac{1}{2}$ inch or centimeter. • describing differences between perimeter and area.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • reading and interpreting simple bar graphs. • identifying spinners that give equal and unequal chances. • extending a simple geometric or numeric pattern. • solving simple one-step multiplication and division equations with a missing variable. • using single digits and the commutative or associative properties to solve problems.
<p>Minimal Performance 444 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • communicating simple mathematical ideas using numbers and pictures. • interpreting place value order numbers from least to greatest. • identifying equivalent word and numerical forms of numbers. • adding monetary amounts to find total cost. • combining pattern blocks to construct simple two-dimensional shapes. • locating ordered pairs on a first quadrant coordinate grid. • Identifying appropriate units of measure. • reading, interpreting and measuring with appropriate measurement tools to the nearest inch or centimeter. • determining perimeter or area. • interpreting data in a line plot. • reading and interpreting simple bar graphs. • recognizing a simple numeric or geometric pattern. • demonstrating an understanding of symbols (<, >, =) in simple addition and subtraction sentences. • using the commutative property involving the addition of single digits.

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. *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 532 and above	<p>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:</p> <ul style="list-style-type: none"> • communicating mathematical ideas using reasoning and logic skills to solve real-world problems involving patterns. • clearly explaining mathematical strategies using correct terminology. • using mathematics in two-step real-world applications. • applying knowledge of place value to solve problems. • comparing and ordering fractions with unlike denominators. • identifying and representing equivalence of fractions, decimals and percents. • dividing whole numbers with double-digit divisors and 3-digit dividends. • analyzing and dividing numbers in a word problem using single-digit divisor and 4-digit dividends. • determining appropriate operations necessary to solve two-step real-world problems. • adding and simplifying fractions with unlike denominators. • identifying types of angles within a shape. • describing attributes of a right triangle. • classifying shapes with more than one line of symmetry. • designing a shape with exactly one line of symmetry. • identifying the three-dimensional shape that is made from a net (flat pattern) when only the net is illustrated. • locating a given coordinate on the first quadrant of a coordinate grid. • plotting the fourth vertex or point of a shape on the first quadrant of a coordinate grid. • converting length within the US customary system of measurement. • identifying appropriate US customary and metric units. • calculating elapsed time involving a.m. and p.m. • determining area from a smaller shape to a larger shape or when given two sides of a rectangle. • estimating measurements with non-standard units. • calculating costs of real-world situations.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • describing data from charts, graphs or number sets using mean , median, mode, and range. • describing the probability of events involving spinners when the spinner is provided or when a description of the spinner is provided using fractions. • extending a numeric or geometric pattern up to the 8th item. • representing a geometric pattern with another pattern. • recognizing a functional relationship between two variables displayed in a table. • solving an order of operations problem with a variable.
<p>Proficient 485 –531</p>	<p>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:</p> <ul style="list-style-type: none"> • clearly communicating mathematical ideas used to solve problems. • providing explanations that contain some detail regarding mathematical ideas used to solve two-step problems. • calculating change under \$5.00 • identifying, comparing, and ordering whole numbers, fractions, decimals, and percents. • dividing in context using 3-digit dividends. • identifying angles as right, acute, or obtuse. • identifying the appropriate net (flat patterns) needed to make a specific three-dimensional shape. • stating the coordinates that make the vertices (corners) of a figure on a first quadrant coordinate grid. • converting within the system of time (minutes and seconds.) • using appropriate tools of measurement to measure real-world objects to the nearest 1/8 inch or millimeter. • describing a set of data using median, range and mode. • making and supporting reasonable conclusions and/or predictions from data. • extending a functional relationship involving multiplication and displayed in a table. • determining the probability of an event with fractions. • solving an equation involving multiple operations. • using the distributive property to solve mathematical problems.
<p>Basic 464 –484</p>	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • using words, numbers or symbols to explain the mathematical ideas used in single-step problems. • recognizing and applying place value concepts to number to the ten thousands place value. • describing a portion of a whole using fractions. • solving three-digit subtraction problems with regrouping without the use of a calculator. • solving word problems using basic multiplication and division without a calculator. • identifying a shape containing a line of symmetry when the line of symmetry is given.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • locating and labeling an ordered pair on the first quadrant of a coordinate grid. • identifying two- and three-dimensional figures. • comparing two points or values on a graph or chart. • reading and interpreting a scale using pounds. • describing a limited (5 or less) set of data in order using mode and range from a graph, chart or number text • determining the probability of simple events. • extending a numeric pattern when given the first four numbers. • solving problems involving order of operations and parentheses.
<p>Minimal Performance 463 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • explaining simple mathematical ideas using some detail. • using place value to express four-digit numbers in expanded notation. • solving basic multiplication fact problems without a calculator. • solving three- and four-digit addition and subtraction problems without a calculator. • identifying angles, polygons and lines of symmetry. • identifying the location of the x-axis and y-axis. • converting within the US customary system of measurement when provided a conversion table. • identifying the maximum and minimum values on a simple graph, chart, or number set. • using terms of likelihood to solve simple probability problems. • recognizing and extending a simple numeric or geometric pattern. • solving problems involving order of operations without parentheses. • using the communicative property of multiplication with positive single digits.

Grade 7 Mathematics

The grade 7 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
<p>Advanced 555 and above</p>	<p>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:</p> <ul style="list-style-type: none"> • providing clear, detailed justifications or explanations regarding mathematical problem solving strategies used to solve problems. • comparing, ordering, adding and subtracting decimals to the thousandth place. • applying proportional reasoning to problem solving situations involving whole numbers, fractions and decimals. • comparing and ordering fractions with different denominators. • applying concepts of least common multiple, prime and composite numbers. • calculating percentages and converting between fractions and decimals with and without calculators. • subtracting mixed numbers with unlike denominators. • characterizing and describing three-dimensional figures based on geometric attributes. • differentiating between similar and congruent figures. • applying knowledge of ordered pairs to determine the correct location in the first quadrant. • converting units of weight and length within the US customary system of measurement when a conversion table is or is not provided. • solving liquid capacity problems requiring multiple steps within the US customary system when a conversion table is provided • estimating length to the nearest ¼ inch. • measuring angles greater than 90° with a protractor. • calculating distances on a map when given a scale. • applying knowledge of the geometric attributes of squares and rectangles to determine area or perimeter. • finding the mean and mode of a given set of data within context. • creating a stem-and-leaf plot when given a set of data. • interpreting and extracting data from a stem-and-leaf plot. • determining the probability of an event based on a simulation when given a set of data. • explaining a numerical sequence using pictures and numbers.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • solving two-step equations with coefficients. • solving three-step algebraic problems involving order of operations.
Proficient 504 –554	<p>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:</p> <ul style="list-style-type: none"> • providing clear but limited justifications or explanations regarding mathematical problem solving strategies. • comparing and ordering decimals written out to the hundredths place. • demonstrating knowledge of place value to ten thousands place and hundredth place. • estimating addition problems involving addends up to six digits. • identifying a transformation of a figure involving a rotation on or off a grid. • analyzing grids to identify if coordinates have been plotted accurately. • graphing coordinates on a first quadrant coordinate grid. • solving problems involving two-step conversions within the US customary system. • measuring angles using a protractor. • estimating measurement of length to the nearest whole unit. • using a ruler and key to determine the distance between two points on a map. • evaluating data in a single bar graph or circle graph to support a hypothesis. • determining the likelihood of an independent event in a real-world context. • stating the probability of a simple experiment with a fraction. • describing a rule used in a functional relationship. • using the associative and commutative properties and order of operations to evaluate and solve equivalent expressions.
Basic 480 –503	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • providing clear but limited explanations regarding mathematical problem solving strategies. • applying concepts of divisibility to solve problems using a calculator. • using addition and subtraction to solve real-world problems involving monetary amounts. • determining fractional parts when given a shaded area. • identifying similar and congruent figures. • selecting the appropriate units of measurement. • determining area and perimeter of squares and rectangles given length and width. • creating a single bar graph from a given set of data. • extracting and interpreting data from single bar graphs and circle graphs. • determining the number of possible combinations possible when given a set. • describing and analyzing functional relationships between two variables. • extending numeric patterns.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • solving problems involving algebraic equations with one variable. • evaluating numerical expressions to identify equivalent expressions using the associative and commutative properties.
<p>Minimal Performance</p> <p>479 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • identifying mathematical problem solving strategies used to solve simple problems. • communicating mathematical ideas using words, pictures, and numbers. • comparing and ordering whole numbers less than 100,000. • calculating addition and subtraction of two numbers up to 100,000. • identifying attributes of three-dimensional geometric shapes using the vocabulary such as face, side, edge and base. • plotting an ordered pair in the first quadrant of a four quadrant coordinate grid. • solving one-step conversion problems involving US customary units of measure, given a conversion table. • estimating length to the nearest $\frac{1}{2}$ inch. • determining the perimeter of a rectangle with the length of sides given. • interpreting information from a single bar graph. • predicting the outcome of a simple event such as a coin toss. • extending a numeric pattern. • describing an algebraic equation in word form. • identifying the commutative property.

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	<p>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:</p> <ul style="list-style-type: none"> • 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. • describing real-world situations represented in a graph.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • 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.
<p>Proficient</p> <p>513 – 572</p>	<p>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:</p> <ul style="list-style-type: none"> • 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.
<p>Basic</p> <p>483 –512</p>	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • 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 $\frac{1}{4}$ inch or millimeter. • measuring angles up to 90° 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.
<p>Minimal Performance 482 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • 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 angles. • 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.

Grade 10 Mathematics

The grade 10 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 calculators (scientific or graphing 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
<p>Advanced</p> <p>595 and above</p>	<p>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:</p> <ul style="list-style-type: none"> • using reasoning and logic skills to determine valid and extraneous information. • providing detailed explanation regarding the reasonableness of conclusions based on calculations, models and arguments using the Pythagorean Theorem, logical reasoning and data analysis. • verifying and explaining a mathematical conjecture. • applying proportional reasoning in a mathematical and real-world context. • solving and analyzing real-world problems using routine and nonroutine methods • analyzing and solving problems using percents in real-world context • describing transformations of complex figures. • reflecting a geometric figure over a line of symmetry on a coordinate plane. • classifying and analyzing geometric figures using geometric properties and theorems. • evaluating the validity of a geometric argument using logical reasoning. • applying attributes of two-dimensional geometric figures to determine coordinates on two-dimensional quadrant grids. • applying the conditions of parallel lines. • locating the X and Y intercepts graphically without a calculator. • converting between multiple units of measurement in mathematical and real-world contexts. • calculating the area of two-dimensional shapes and the surface area of three-dimensional figures. • connecting and applying relationships between angles to solve real-world problems. • modeling and verifying geometric arguments using the Pythagorean Theorem. • applying the Pythagorean Theorem to solve problems involving right triangles. • finding the midpoint between points in a coordinate plane using the midpoint formula. • calculating the distance between points in a coordinate plane using the distance formula. • comparing and analyzing values to statistical data given box-and-whisker plots.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • creating a scatter plot with appropriate scale and labels and analyze the data. • identifying appropriate ranges of values using standard deviations. • analyzing the effect of outliers on the mean for a set of data. • calculating the probability or outcomes of events with or without replacement and using fundamental counting principles. • analyzing data from a table in order to draw conclusions. • generalizing patterns of various sequences. • translating a set of ordered pairs into a linear equation without a calculator. • translating information from a real-world context into linear equations and representing it numerically, algebraically or graphically. • demonstrating an understanding of algebraic properties by solving quadratic equations. • solving problems involving the conversion of customary and metric units of measurement. • using measurement tools to solve multi-step problems involving a scale (key).
Proficient 541 - 594	<p>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:</p> <ul style="list-style-type: none"> • providing justifications for solutions and providing details to support reasoning. • solving problems involving familiar percents in real-world contexts. (e.g. commission) • identifying, locating or plotting coordinates of geometric figures transformed in a coordinate plane. • applying concepts of proportion to solve and extend problems involving similarity. • applying relationships between angles and circles to solve real-world problems. • converting between units of measurement. • applying measurement tools to solve problems and to calculate the area of two-dimensional shapes. • using the Pythagorean Theorem, distance or midpoint formulas to solve basic problems. • creating a scatter plot with appropriate scale and labels. • calculating the median of a set of data in a real-world setting. • analyzing the design of statistical experiments. • comparing and interpreting the results of a survey given in a graphical representation. • calculating the probability of an event other than the first occurrence. • Determining a rule for patterns and extending patterns in real-world context. • interpreting the graph of a quadratic relationship of two-real world quantities. • subtracting values for multiple variables and solving the equation. • applying algebraic properties to solve a multi-step non-linear equation or inequality.
Basic 516 –540	<p>At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • representing processes in real-world situations and providing justifications for solutions. • identifying information necessary to solve real-world problems.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	<ul style="list-style-type: none"> • explaining the reasonableness of solutions. • adding, subtracting, multiplying and dividing integers in mathematical and real-world contexts. • recognizing relationships between supplementary angles. • identifying similar geometric figures using ratios. • determining the slope of a line. • calculating the length of any side of a right triangle when given the other two sides. • approximating linear and area measurements. • selecting appropriate tools of measurement to solve problems. • converting between US customary and metric systems of measure. • interpreting and translating graphical representations of real-world phenomena of linear and non-linear data. • identifying appropriate sample sets when conducting a survey. • predicting values beyond the range of a linear graph. • calculating the probability of single events. • analyzing the rate of change as expressed graphically between two sets of real-world data. • translating a verbal problem into a linear expression with one variable. • demonstrating an understanding of algebraic properties while solving multi-step linear equations or inequalities.
<p>Minimal Performance 515 and below</p>	<p>At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:</p> <ul style="list-style-type: none"> • communicating mathematical ideas using simple explanations to support conclusions. • comparing and ordering real numbers. • adding and subtracting decimals without the use of a calculator. • classifying two- and three-dimensional figures. • identifying corresponding parts of congruent geometric figures. • using a four quadrant coordinate grid to determine locations of more than one ordered pair. • selecting and using appropriate tools of measurement to the nearest inch. • converting between US customary and metric systems of measurement to solve problems. • determining the mean, median, mode and range of an even or odd set of data. • Predicting the likelihood of a single event. • analyzing data from tables and linear graphs. • interpreting relationships demonstrated by linear graphs. • identifying the graph of a constant fraction. • applying associative, commutative or distributive properties to multi-step algebraic equations.

Math Performance Levels: Feedback

Please help us improve this document! We welcome your comments and questions. Please contact us at:

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Please remember to include your contact information if you desire a response.

Math Performance Levels: Document Revision History

This document is the original version released in September 2006.

Date Revised	Version	Page	Description
Sept 2006	1.0		Initial release.