

COMPONENT	OBJECTIVES	COMPETENCY
<p>I Number Sense, Concepts, and Operations</p>	<ol style="list-style-type: none"> 1. Reads, writes, and identifies whole numbers, fractions, mixed numbers, and decimals through thousandths. (MA.A.1.2.1) 2. Reads, writes, and identifies common percents including 10%, 20%, 25%, 30%, 40%, 50%, 60%, 70%, 75%, 80%, 90%, and 100%. (MA.A.1.2.1) 3. Compares and orders whole numbers, commonly used fractions, percents, and decimals to thousandths using concrete materials, number lines, drawings, numerals, and symbols. (MA.A.1.2.2) 4. Compares and orders whole numbers (beyond millions) using concrete materials, number lines, drawings and numerals. (MA.A.1.2.2) 5. Compares and orders commonly used fractions, percents, and decimals to thousandths using concrete materials, number lines, drawings, and numerals. (MA.A.1.2.2) 6. Locates whole numbers, fractions, mixed numbers, and decimals on the same number line. (MA.A.1.2.2) 7. Translates problem situations into diagrams, models, and numerals using whole numbers, fractions, mixed numbers, decimals, and percents. (MA.A.1.2.3) 8. Understands that numbers in different forms are equivalent or nonequivalent, using whole numbers, decimals, fractions, mixed numbers, and percents. (MA.A.1.2.4) 9. Relates percents to fractions and decimals and justifies the reasoning. (MA.A.1.2.4) 	<p>A. The student understands the different ways numbers are represented and used in the real world.</p>

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	<p>10. Knows that place value relates to powers of 10. (MA.A.2.2.1)</p> <p>11. Expresses numbers to millions or more in expanded form using powers of ten, with or without exponential notation. (MA.A.2.2.1)</p> <p>12. Explains the similarities and differences between the decimal (base 10) number system and other number systems that do or do not use place value. (MA.A.2.2.2)</p> <p>13. Explains and demonstrates the multiplication of common fractions using concrete materials, drawings, story problems, symbols, and algorithms. (MA.A.3.2.1)</p> <p>14. Explains and demonstrates the multiplication of decimals to hundredths using concrete materials, drawings, story problems, symbols, and algorithms. (MA.A.3.2.1)</p> <p>15. Predicts the relative size of solutions in the following:</p> <ul style="list-style-type: none"> · Addition, subtraction, multiplication, and division of whole numbers · Addition, subtraction, and multiplication of fractions, decimals, and mixed numbers, with particular attention given to fraction and decimal multiplication (for example, when two numbers less than one are multiplied, the result is a number less than either factor). (MA.A.3.2.1) <p>16. Explains and demonstrates the inverse nature of multiplication and division, with particular attention to multiplication by a fraction. (MA.A.3.2.1)</p> <p>17. Explains and demonstrates the commutative, associative, and distributive properties of multiplication. (MA.A.3.2.1)</p>	<p>B. The student understands number systems.</p> <p>C. The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.</p>

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	<p>18. Determines sums, differences, products, and quotients of common fractions, mixed numbers, and decimals using manipulatives, diagrams, and whole language, and recognizes whether or not results are reasonable. (M.A.A.3.2.1)</p> <p>19. Uses integers in relevant problem-solving situations. (M.A.A.3.2.1)</p> <p>20. Uses inverse operations to check for accuracy of results. (M.A.A.3.2.1)</p> <p>21. Uses problem-solving strategies to determine the operation(s) needed to solve one- and two- step problems involving addition, subtraction, multiplication, and division of whole numbers, and addition, subtraction, and multiplication of decimals and fractions. (M.A.A.3.2.2)</p> <p>22. Solves real-world problems involving: addition, subtraction, multiplication, and division of whole numbers, and addition, subtraction, and multiplication of decimals, fractions, and mixed numbers using an appropriate method. (M.A.A.3.2.3)</p> <p>23. Chooses, describes, and explains estimation strategies used to determine whether or not solutions to real-world problems are reasonable. (M.A.A.4.2.1)</p> <p>24. Estimates quantities of objects to 1000 or more and justifies and explains the reasoning for the estimate. (M.A.A.4.2.1)</p> <p>25. Rounds appropriately for given situations involving whole numbers, fractions, decimals, percents, and money. (M.A.A.4.2.1)</p>	<p>D. The student uses estimation in problem solving and computation.</p>

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	<p>26. Finds factors of numbers to 144 to determine if they are prime or composite. (MA.A.5.2.1)</p> <p>27. Expresses a whole number as a product of its prime factors. (MA.A.5.2.1)</p> <p>28. Determines the greatest common factor of two numbers. (MA.A.5.2.1)</p> <p>29. Determines the least common multiple of two numbers up to 100 or more. (MA.A.5.2.1)</p> <p>30. Multiplies by powers of 10 (100, 1,000, and 10,000) demonstrating patterns. (MA.A.5.2.1)</p> <p>31. Identifies and applies rules of divisibility for 2, 3, 4, 5, 6, 9, and 10. (MA.A.5.2.1)</p> <p>32. Uses models to identify perfect squares to 144. (MA.A.5.2.1)</p> <p>33. Writes number sentences and word problems using combinations of operations, including powers. (MA.A.5.2.1)</p>	<p>E. The student understands and applies theories related to numbers.</p>

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<p>II Measurement</p>	<ol style="list-style-type: none"> 1. Communicates measurement concepts using oral and written language. (MA.B.1.2.1) 2. Extends conceptual experiences into patterns to develop formulas for determining perimeter, area, and volume. (MA.B.1.2.1) 3. Knows varied units of time that include centuries and seconds. (MA.B.1.2.1) 4. Measures and classifies acute, obtuse, right, and straight angles expressing conclusions in mathematical language and symbols. (MA.B.1.2.1) 5. Explores the relationship between the circumference and the diameter of a circle using concrete materials such as string, measuring tapes, lids and cans. (MA.B.1.2.1) 6. Solves real-world problems involving measurement using concrete and pictorial models for: <ul style="list-style-type: none"> · length (for example, eighth-inch, kilometer, mile) · weight or mass (for example, milligram, ton) · temperature (comparing temperature changes in same scale using Fahrenheit or Celsius thermometer) · angles (acute, obtuse, straight). (MA.B.1.2.2) 7. Distinguishes whether a problem situation calls for measuring length, area, volume, or capacity and choose the appropriate unit and tool to use. (MA.B.1.2.2) 8. Uses schedules, calendars, and elapsed time to solve real-world problems. (MA.B.1.2.2) 	<p>A. The student measures quantities in the real world and uses the measures to solve problems.</p>

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	<p>9. Finds the length or height of “hard to reach” objects by using the measure of a portion of the objects. (MA.B.2.2.1)</p> <p>10. Uses customary and metric units to compare length, weight, or mass, and capacity or volume. (MA.B.2.2.1)</p> <p>11. Uses multiplication and division to convert units of measure <u>within</u> the customary or metric system. (MA.B.2.2.1)</p> <p>12. Selects and uses an appropriate unit of measure to determine the dimension(s) of a given object. (MA.B.2.2.2)</p> <p>13. Selects and uses an appropriate unit of measure (standard or nonstandard) to measure weight, mass, and capacity. (MA.B.2.2.2)</p> <p>14. Distinguishes when it is appropriate to measure versus when it is appropriate to estimate and determine the degree of accuracy needed. (MA.B.3.2.1)</p> <p>15. Solves real-world problems involving estimated measurements, including the following: length to nearest quarter-inch, centimeter weight to nearest ounce, gram time to nearest one-minute interval temperature to nearest five-degree interval money to nearest \$1.00. (MA.B.3.2.1)</p> <p>16. Estimates the area and perimeter of regular and irregular polygons. (MA.B.3.2.1)</p> <p>17. Estimates the volume of a rectangular prism. (MA.B.3.2.1)</p>	<p>B. The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).</p> <p>C. The student estimates measurements in real-world problem situations.</p>

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<p>III Geometry and Spatial Sense</p>	<p>18. Selects an appropriate measurement unit for labeling the solution to real-world problems. (MA.B.4.2.1)</p> <p>19. Selects and uses the appropriate tool such as measuring sticks, scales, balances, thermometers, measuring cups, gauges, and protractors for situational measures. (MA.B.4.2.2)</p> <p>20. Uses a conversion table to solve real-world problems involving measurement. (MA.B.4.2.2)</p> <p>1. Uses appropriate geometric vocabulary to describe properties and attributes of two-dimensional and three-dimensional figures. (MA.C.1.2.1)</p> <p>2. Draws and classifies two-dimensional figures having ten or more sides and three-dimensional figures such as cubes, rectangular prisms, and pyramids. (MA.C.1.2.1)</p> <p>3. Knows the characteristics of and relationships among points, lines, line segments, rays, and planes. (MA.C.1.2.1)</p> <p>4. Explores, discovers and justifies properties of triangles, quadrilaterals, and circles. (MA.C.1.2.1)</p>	<p>D. The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations.</p> <p>A. The student describes, draws, identifies, and analyzes two- and three- dimensional shapes.</p>

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	<ol style="list-style-type: none"> 5. Uses manipulatives to solve problems requiring spatial visualization. (MA.C.2.2.1) 6. Knows symmetry, congruency, and reflections in geometric figures. (MA.C.2.2.1) 7. Knows how to justify that two figures are congruent or similar. (MA.C.2.2.1) 8. Identifies and performs geometric transformations: flip/reflection, turn/rotation (90°, 180°, 270°), and slide/translation. (MA.C.2.2.2) 9. Understands the effect of a flip, slide, and turn (90°, 180°, 270°) (clockwise and counter-clockwise) on a geometric figure. (MA.C.2.2.2) 10. Explores tessellations. (MA.C.2.2.2) 11. Predicts the attributes of the unseen faces of three-dimensional figures using a net (two-dimensional diagram). (MA.C.2.2.2) 12. Compares the concepts of area, perimeter, and volume through the use of concrete materials and real-world situations, (for example, tiling a floor, bordering a room, and packing a box). (MA.C.3.2.1) 13. Applies the concepts of area, perimeter, and volume to solve real-world and mathematical problems using student-developed formulas. (MA.C.3.2.1) 14. Understands how area and perimeter are affected when geometric figures are combined, enlarged, or reduced. (MA.C.3.2.1) 	<p>B. The student visualizes and illustrates ways in which shapes can be combined, subdivided, and changed.</p> <p>C. The student uses coordinate geometry to locate objects in both two- and three-dimensions and to describe objects algebraically.</p>

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<p>IV Algebraic Thinking</p>	<p>15. Understands how to identify, locate, and plot ordered pairs of whole numbers on a graph or on the first quadrant of a coordinate system. (M.A.C.3.2.2)</p> <p>1. Describes, extends, creates, predicts and generalizes numerical and geometric patterns using a variety of models such as, lists, graphs, charts, and calendar math. (M.A.D.1.2.1)</p> <p>2. Poses, and solves, problems by identifying a predictable visual or numerical pattern. (M.A.D.1.2.1)</p> <p>3. Explains and expresses numerical relationships and pattern generalizations, using algebraic symbols. (M.A.D.1.2.1)</p> <p>4. Understands mathematical relationships in patterns. (M.A.D.1.2.2)</p> <p>5. Analyzes and generalizes number patterns and states the general rule for the relationships. (M.A.D.1.2.2)</p> <p>6. Applies the appropriate rule to complete a table or a chart. (M.A.D.1.2.2)</p> <p>7. Solves problems involving simple equations or inequalities using concrete or pictorial models, symbolic expressions, or written phrases. (M.A.D.2.2.1)</p> <p>8. Uses a variable to represent a given verbal expression. (M.A.D.2.2.1)</p> <p>9. Translates equations into verbal and written problem situations. (M.A.D.2.2.1)</p>	<p>A. The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.</p> <p>B. The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations.</p>

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<p>V Data Analysis and Probability</p>	<p>10. Uses concrete or pictorial models, drawings, number lines, and graphs to solve equations or inequalities. (MA.D.2.2.2)</p> <p>11. Uses information from concrete or pictorial models or graphs to solve problems. (MA.D.2.2.2)</p> <p>1. Understands which type of graph (bar, line or circle) is appropriate for different kinds of data. (MA.E.1.2.1)</p> <p>2. Compares and interprets information from different types of graphs including graphs from content-area materials and periodicals. (MA.E.1.2.1)</p> <p>3. Chooses reasonable titles, labels, scales, and intervals for organizing data on graphs. (MA.E.1.2.1)</p> <p>4. Generates questions, collects responses and displays data on a graph. (MA.E.1.2.1)</p> <p>5. Completes and interprets circle graphs containing common percents and fractions. (MA.E.1.2.1)</p> <p>6. Analyzes and explains orally and in writing the implications of graphed data. (MA.E.1.2.1)</p> <p>7. Uses a stem-and-leaf plot from a set of data to identify the range, median, mean, and mode. (MA.E.1.2.2)</p> <p>8. Uses range and measures of central tendency, mean, median, and mode, in real-world situations. (MA.E.1.2.2)</p>	<p>A. The student understands and uses the tools of data analysis for managing information.</p>

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	<p>9. Uses a calculator to determine the range and mean of a set of data. (MA.E.1.2.3)</p> <p>10. Uses computer applications to examine and evaluate data. (MA.E.1.2.3)</p> <p>11. Uses computer applications to construct labeled graphs. (MA.E.1.2.3)</p> <p>12. Uses computer-generated spreadsheets to record and display real-world data. (MA.E.1.2.3)</p> <p>13. Determines the number of possible combinations of given items and displays them in an organized manner. (MA.E.2.2.1)</p> <p>14. Represents all possible outcomes for a simple probability situation or event using models such as organized lists, charts or tree diagrams. (MA.E.2.2.1)</p> <p>15. Calculates the probability of a particular event occurring from a set of all possible outcomes. (MA.E.2.2.1)</p> <p>16. Determines and records the possible outcomes of an experiment using concrete materials such as spinners, marbles, and number cubes. (MA.E.2.2.2)</p> <p>17. Determines and expresses the probability of an event as ratios. (MA.E.2.2.2)</p> <p>18. Conducts experiments to test predictions (examples: bags, spinners, etc.). (MA.E.2.2.2)</p>	<p>B. The student identifies patterns and makes predictions from an orderly display of data using concepts of probability and statistics.</p>

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	<p>19. Designs a survey to collect data. (MA.E.3.2.1)</p> <p>20. Discusses the purpose of random sampling. (MA.E.3.2.1)</p> <p>21. Creates an appropriate graph to display data, including titles, labels, scales, and intervals. (MA.E.3.2.1)</p> <p>22. Interprets the results using statistics (range and measures of central tendency: mean, median and mode). (MA.E.3.2.1)</p> <p>23. Uses statistical data about life situations to predict trends and make generalizations. (MA.E.3.2.2)</p> <p>24. Justifies and explains generalizations. (MA.E.3.2.2)</p>	<p>C. The student uses statistical methods to make inferences and valid arguments about real-world situations.</p>