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Standard	Everyday Math Goal	Ohio Benchmark
<p>Number, Number Sense, and Operations</p>	<p>Goal 1. Read and write whole numbers and decimals; identify places in such numbers and the values of the digits in those places; use expanded notation to represent whole numbers and decimals.</p>	<p>Grades 3-4</p>
<p>Number, Number Sense, and Operations</p>	<p>Goal 2. Solve problems involving percents and discounts; describe and explain strategies used; identify the unit whole in situations involving fractions.</p>	<p>C. Develop meaning for percents, including percents greater than 100 and less than 1.</p> <p>D. Use models and pictures to relate concepts of ratio, proportion and percent.</p>
<p>Number, Number Sense, and Operations</p>	<p>Goal 3. Identify prime and composite numbers; factor numbers; find prime factorizations.</p>	<p>G. Apply and explain the use of prime factorizations, common factors, and common multiples in problem situations</p>
<p>Number, Number Sense, and Operations</p>	<p>Goal 4. Use numerical expressions involving one or more of the basic four arithmetic operations, grouping symbols, and exponents to give equivalent names for whole numbers; convert between base-10, exponential, and repeated-factor notations.</p>	<p>Grades 3-4</p>
<p>Number, Number Sense, and Operations</p>	<p>Goal 5. Use numerical expressions to find and represent equivalent names for fractions, decimals, and percents; use and explain multiplication and division rules to find equivalent fractions and fractions in simplest form; convert between fractions and mixed numbers; convert between fractions,</p>	<p>B. Compare, order and convert among fractions, decimals and percents.</p> <p>C. Develop meaning for percents, including percents greater than 100 and less than 1.</p>

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	decimals, and percents.	
Number, Number Sense, and Operations	Goal 6. Compare and order rational numbers; use area models, benchmark fractions, and analyses of numerators and denominators to compare and order fractions and mixed numbers; describe strategies used to compare fractions and mixed numbers.	B. Compare, order and convert among fractions, decimals and percents. C. Develop meaning for percents, including percents greater than 100 and less than 1.
Number, Number Sense, and Operations	Goal 1. Use mental arithmetic, paper-and-pencil algorithms, and calculators to solve problems involving the addition and subtraction of whole numbers, decimals, and signed numbers; describe the strategies used and explain how they work.	A. Represent and compare numbers less than 0 through familiar applications and extending the number line. H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers. I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.
Number, Number Sense, and Operations	Goal 2. Demonstrate automaticity with multiplication facts and proficiency with division facts and fact extensions.	Grades 3-4
Number, Number Sense, and Operations	Goal 3. Use mental arithmetic, paper-and-pencil algorithms, and calculators to solve problems involving the multiplication of whole numbers and decimals and the division of multidigit whole numbers and decimals by whole numbers; express remainders as whole numbers or fractions as	H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers. I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers,

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	appropriate; describe the strategies used and explain how they work.	fractions, decimals and percents.
Number, Number Sense, and Operations	Goal 4. Use mental arithmetic, paper and pencil algorithms, and calculators to solve problems involving the addition and subtraction of fractions and mixed numbers; describe the strategies used and explain how they work.	H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers. I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.
Number, Number Sense, and Operations	Goal 5. Use area models, mental arithmetic, paper and pencil algorithms, and calculators to solve problems involving the multiplication of fractions and mixed numbers; use diagrams, a common denominator method, and calculators to solve problems involving the division of fractions; describe the strategies used.	H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers. I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.
Number, Number Sense, and Operations	Goal 6. Make reasonable estimates for whole number and decimal addition, subtraction, multiplication, and division problems and fraction and mixed number addition and subtraction problems; explain how the estimates were obtained.	I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.
Number, Number Sense, and Operations	Goal 7. Use repeated addition, arrays, area, and scaling to model multiplication and division; use	D. Use models and pictures to relate concepts of ratio, proportion and percent.

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	<p>ratios expressed as words, fractions, percents, and with colons; solve problems involving ratios of parts of a set to the whole set.</p>	<p>H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers.</p> <p>I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.</p>
<p>Measurement <i>(Benchmarks F and G are not EM goals)</i></p>	<p>Goal 1. Estimate length with and without tools; measure length with tools to the nearest $\frac{1}{8}$ inch and millimeter; estimate the measure of angles with and without tools; use tools to draw angles with given measures.</p>	<p>A. Select appropriate units to measure angles, circumference, surface area, mass and volume, using:</p> <ul style="list-style-type: none"> • U.S. customary units; e.g., degrees, square feet, pounds, and other units as appropriate; • metric units; e.g., square meters, kilograms and other units as appropriate. <p>C. Identify appropriate tools and apply appropriate techniques for measuring angles, perimeter or circumference and area of triangles, quadrilaterals, circles and composite shapes, and surface area and volume of prisms and cylinders.</p> <p>D. Select a tool and measure accurately to a specified level of precision.</p>
<p>Measurement</p>	<p>Goal 2. Describe and use strategies to find the perimeter of polygons and the area of circles; choose and use appropriate formulas to calculate the areas</p>	<p>C. Identify appropriate tools and apply appropriate techniques for measuring angles, perimeter or circumference and area of triangles, quadrilaterals,</p>

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	of rectangles, parallelograms, and triangles, and the volume of a prism; define π as the ratio of a circle's circumference to its diameter.	circles and composite shapes, and surface area and volume of prisms and cylinders. D. Select a tool and measure accurately to a specified level of precision. E. Use problem solving techniques and technology as needed to solve problems involving length, weight, perimeter, area, volume, time and temperature.
Measurement	Goal 3. Describe relationships among U.S. customary units of length; among metric units of length; and among U.S. customary units of capacity.	B. Convert units of length, area, volume, mass and time within the same measurement system.
Geometry and Spatial Sense <i>(Benchmarks B, G, and I are not EM goals)</i>	Goal 4. Use ordered pairs of numbers to name, locate, and plot points in all four quadrants of a coordinate grid.	C. Specify locations and plot ordered pairs on a coordinate plane
Geometry and Spatial Sense	Goal 1. Identify, describe, compare, name, and draw right, acute, obtuse, straight, and reflex angles; determine angle measures in vertical and supplementary angles and by applying properties of sums of angle measures in triangles and quadrangles.	A. Identify and label angle parts and the regions defined within the plane where the angle resides. D. Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.
Geometry and Spatial Sense	Goal 2. Describe, compare, and classify plane and solid figures using appropriate geometric terms; identify congruent figures and describe their properties.	D. Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.
Geometry and	Goal 3. Identify, describe, and sketch examples of	H. Predict and describe results (size, position, orientation)

<p>Spatial Sense</p>	<p>reflections, translations, and rotations.</p>	<p>of transformations of two-dimensional figures.</p>
<p>Patterns, Functions, and Algebra</p> <p><i>(Benchmarks J, L, and M are not EM goals)</i></p>	<p>Goal 1. Extend, describe, and create numeric patterns; describe rules for patterns and use them to solve problems; write rules for functions involving the four basic arithmetic operations; represent functions using words, symbols, tables, and graphs and use those representations to solve problems.</p>	<p>A. Describe, extend and determine the rule for patterns and relationships occurring in numeric patterns, computation, geometry, graphs and other applications.</p> <p>B. Represent, analyze and generalize a variety of patterns and functions with tables, graphs, words and symbolic rules.</p> <p>C. Use variables to create and solve equations and inequalities representing problem situations.</p> <p>D. Use symbolic algebra to represent and explain mathematical relationships.</p> <p>E. Use rules and variables to describe patterns, functions and other relationships.</p> <p>F. Use representations, such as tables, graphs and equations, to model situations and to solve problems, especially those that involve linear relationships.</p> <p>K. Graph linear equations and inequalities.</p>
<p>Patterns, Functions, and Algebra</p>	<p>Goal 2. Determine whether number sentences are true or false; solve open number sentences and explain the solutions; use a letter variable to write an open sentence to model a number story; use a pan-balance model to solve linear</p>	<p>C. Use variables to create and solve equations and inequalities representing problem situations.</p> <p>D. Use symbolic algebra to represent and explain mathematical relationships.</p>

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	equations in one unknown.	E. Use rules and variables to describe patterns, functions and other relationships. G. Write, simplify and evaluate algebraic expressions.
Patterns, Functions, and Algebra	Goal 3. Evaluate numeric expressions containing grouping symbols and nested grouping symbols; insert grouping symbols and nested grouping symbols to make number sentences true; describe and use the precedence of multiplication and division over addition and subtraction.	none
Patterns, Functions, and Algebra	Goal 4. Describe and apply properties of arithmetic.	none
Data Analysis and Probability <i>(Benchmark D is not an EM goal)</i>	Goal 1. Collect and organize data or use given data to create bar, line, and circle graphs with reasonable titles, labels, keys, and intervals.	A. Read, create and use line graphs, histograms, circle graphs, box-and-whisker plots, stem-and-leaf plots, and other representations when appropriate. B. Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions E. Collect, organize, display and interpret data for a specific purpose or need
Data Analysis and Probability	Goal 2. Use the maximum, minimum, range, median, mode, and mean and graphs to ask and answer questions, draw conclusions, and make predictions.	B. Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions. C. Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions,

		<p>and justify new findings.</p> <p>F. Determine and use the range, mean, median and mode to analyze and compare data, and explain what each indicates about the data.</p> <p>G. Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.</p>
<p>Data Analysis and Probability</p>	<p>Goal 3. Describe events using <i>certain, very likely, likely, unlikely, very unlikely, impossible</i> and other basic probability terms; use <i>more likely, equally likely, same chance, 50–50, less likely</i>, and other basic probability terms to compare events; explain the choice of language.</p>	<p>I. Describe the probability of an event using ratios, including fractional notation.</p>
<p>Data Analysis and Probability</p>	<p>Goal 4. Predict the outcomes of experiments, test the predictions using manipulatives, and summarize the results; compare predictions based on theoretical probability with experimental results; use summaries and comparisons to predict future events; express the probability of an event as a fraction, decimal, or percent.</p>	<p>H. Find all possible outcomes of simple experiments or problem situations, using methods such as lists, arrays and tree diagrams.</p> <p>I. Describe the probability of an event using ratios, including fractional notation.</p> <p>J. Compare experimental and theoretical results for a variety of simple experiments.</p> <p>K. Make and justify predictions based on experimental and theoretical probabilities.</p>