

**MATHEMATICS CROSSWALK**  
**2008 MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD**  
**GRADE 5**

<b>MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL</b>				
<b>Strand 1: Number and Operations</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Number Sense</b>	1	Determine equivalence by converting between benchmark fractions, decimals, and percents.	8	Determine the equivalency between and among fractions, decimals, and percents in contextual situations.
			M02-S1C1-20	Distinguish the equivalency among decimals, fractions and percents (e.g., half-dollar = 50¢ = 50%).
			M03-S1C1-19	Determine the equivalency among decimals, fractions, and percents (e.g., half-dollar = 50¢ = 50% and $1/4 = 0.25 = 25%$ ).
	2	Differentiate between prime and composite numbers; differentiate between factors and multiples for whole numbers.	10	Recognize that 1 is neither a prime nor a composite number.
			11	Sort whole numbers (through 50) into sets containing only prime numbers or only composite numbers.
	3	Locate integers on a number line.	M07-S1C1-06	Locate integers on a number line.
	4	Compare and order positive fractions, decimals, and percents.	4	Compare two proper fractions or improper fractions with like denominators.
			5	Order three or more unit fractions, proper or improper fractions with like denominators, or mixed numbers with like denominators.
			6	Compare two whole numbers, fractions, and decimals (e.g., $1/2$ to 0.6).
			7	Order whole numbers, fractions, and decimals.
	5	*Use ratios and unit rates to model, describe and extend problems in context.*		
	6	Express or interpret positive and negative numbers in context.	M07-S1C1-04	Choose the appropriate signed real number to represent a contextual situation.
	M04-S1C1-01	<b>Moved to Grade 4</b>	1	Make models that represent improper fractions.
			2	Identify symbols, words, or models that represent improper fractions.
	M04-S1C1-03	<b>Moved to Grade 4</b>	3	Use improper fractions in contextual situations.

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Strand 1: Number and Operations				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Number Sense	M04-S1C1-02	Moved to Grade 4	9	Identify all whole number factors and pairs of factors for a number.
2. Numerical Operations	1	Add and subtract decimals through thousandths and fractions expressing solutions in simplest form.	10	Simplify fractions to lowest terms.
			11	Add or subtract proper fractions and mixed numbers with like denominators with regrouping.
			12	Add or subtract decimals.
	2	Multiply multi-digit whole numbers.	3	Multiply whole numbers.
	3	Divide multi-digit whole numbers by whole number divisors with and without remainders.	4	Divide with whole numbers.
	4	Apply the associative, commutative, and distributive properties to solve numerical problems.	5	Demonstrate the distributive property of multiplication over addition.
			6	Demonstrate the addition and multiplication properties of equality.
			7	Apply grade-level appropriate properties to assist in computation.
			M04-S1C2-10	Apply the symbol: $\bullet$ and $( )$ for multiplication, and $\leq, \geq$ . <b>(raised dot and parentheses only)</b>
	5	Simplify numerical expressions (including fractions and decimals) using the order of operations with or without grouping symbols.	7	Apply grade-level appropriate properties to assist in computation.
			8	Apply the symbol “[ ]” to represent grouping.
			15	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.
		<b>REMOVED (This skill is required throughout the standard).</b>	1	Select the grade-level appropriate operation to solve word problems.
			2	Solve word problems using grade-level appropriate operations and numbers.
			9	Use grade-level appropriate mathematical terminology.
	M06-S1C2-02	Moved to Grade 6	13	Multiply decimals.
	M06-S1C2-03	Moved to Grade 6	14	Divide decimals.

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<b>Strand 1: Number and Operations</b>				
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<b>3. Estimation</b>	1	Make estimates appropriate to a given situation or computation with whole numbers, fractions, and decimals.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is $4.1 \times 2.7$ about 12?).
			3	Round to estimate quantities.
	M05-S4C4-05	<b>Moved to Strand 4 Concept 4</b>	4	Estimate and measure for area and perimeter.
	M07-S1C3-04	<b>Moved to Grade 7</b>	5	Compare estimated measurements between U.S. customary and metric systems (e.g., A yard is about a meter.).

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<b>Strand 2: Data Analysis, Probability, and Discrete Mathematics</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Data Analysis (Statistics)</b>	1	Collect, record, organize, and display data using multi-bar graphs or double line graphs.	2	Construct a double-bar graph, line plot, frequency table, or three-set Venn diagram with appropriate labels and title from organized data.
	2	Formulate and answer questions by interpreting and analyzing displays of data, including multi-bar graphs or double line graphs.	3	Interpret graphical representations and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.
4			Answer questions based on graphical representations, and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.	
6			Formulate reasonable predictions from a given set of data.	
8			Solve contextual problems using graphs, charts, and tables.	
	3	Use mean, median, mode, and range to analyze and describe the distribution of a given data set.	5	Identify the mode(s) and mean (average) of given data.
		<b>REMOVED</b>	1	Formulate questions to collect data in contextual situations.
	M04-S2C1-04	<b>Moved to Grade 4</b>	7	Compare two sets of data related to the same investigation.
<b>2. Probability</b>	1	Describe the theoretical probability of events and represent the probability as a fraction, decimal, or percent.	1	Name the possible outcomes for a probability experiment.
			M06-S2C2-02	Express probabilities of a single event as a decimal.

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**Strand 2: Data Analysis, Probability, and Discrete Mathematics**

CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
<b>2. Probability</b>	2	Explore probability when performing experiments by <ul style="list-style-type: none"> <li>• predicting the outcome,</li> <li>• recording the data,</li> <li>• comparing outcomes of the experiment to predictions, and</li> <li>• comparing the results of multiple repetitions of the experiment.</li> </ul> <b>(continued on next page)</b>	3	Predict the outcome of a grade-level appropriate probability experiment.
			4	Record the data from performing a grade-level appropriate probability experiment.
			5	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).
			7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
			M02-S2C2-03	Predict the outcome of a grade-level appropriate probability experiment.
			M02-S2C2-04	Record the data from performing a grade-level appropriate probability experiment.
			M02-S2C2-05	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			M02-S2C2-06	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
			M03-S2C2-03	Predict the outcome of a grade-level appropriate probability experiment.
			M03-S2C2-04	Record the data from performing a grade-level appropriate probability experiment.
			M03-S2C2-05	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			M03-S2C2-06	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
			M04-S2C2-03	Predict the outcome of a grade-level appropriate probability experiment.
			M04-S2C2-04	Record the data from performing a grade-level appropriate probability experiment.

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<b>Strand 2: Data Analysis, Probability, and Discrete Mathematics</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>2. Probability</b>	2	Explore probability when performing experiments by <ul style="list-style-type: none"> <li>• predicting the outcome,</li> <li>• recording the data,</li> <li>• comparing outcomes of the experiment to predictions, and</li> <li>• comparing the results of multiple repetitions of the experiment.</li> </ul>	M04-S2C2-05	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			M04-S2C2-06	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).
			M04-S2C2-07	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
	M04-S2C2-01	<b>Moved to Grade 4</b>	2	Describe the probability of events as being: <ul style="list-style-type: none"> <li>• certain (represented by “1”),</li> <li>• impossible, (represented by “0”), or</li> <li>• neither certain nor impossible (represented by a fraction less than 1).</li> </ul>
<b>3. Systematic Listing and Counting</b>	1	*Analyze relationships among representations and make connections to the multiplication principle of counting.*		
	2	Solve a variety of counting problems and explain the multiplication principle of counting.	1	Find all possible combinations when one item is selected from each of two sets of different items, using a systematic approach. (e.g., shirts: tee shirt, tank top, sweatshirt; pants: shorts, jeans).
<b>4. Vertex-Edge Graphs</b>	1	*Investigate properties of vertex-edge graphs <ul style="list-style-type: none"> <li>• Euler paths,</li> <li>• Euler circuits, and</li> <li>• degree of a vertex.*</li> </ul>		
	2	*Solve problems related to Euler paths and circuits.*		
	M03-S2C4-01	<b>Moved to Grade 3</b>	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).

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<b>Strand 3: Patterns, Algebra, and Functions</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Patterns</b>	1	Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using addition and subtraction.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
			2	Extend a grade-level appropriate iterative pattern.
			3	Solve grade-level appropriate iterative pattern problems.
<b>2. Functions and Relationships</b>		<b>No performance objectives at this grade level.</b>		
	M02-S3C2-01	<b>Moved to Grade 2</b>	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).
<b>3. Algebraic Representations</b>	1	Create and solve two-step equations that can be solved using inverse operations with whole numbers.	2	Use variables in contextual situations.
			3	Solve one-step equations with one variable represented by a letter or symbol (e.g., $15 = 45 \div n$ ).
	M06-S3C3-04	<b>Moved to Grade 6</b>	1	Evaluate expressions involving the four basic operations by substituting given decimals for the variable.
<b>4. Analysis of Change</b>	1	Describe patterns of change including constant rate and increasing or decreasing rate.	1	Describe patterns of change: <ul style="list-style-type: none"> <li>• constant rate (speed of movement of the hands on a clock), and</li> <li>• increasing or decreasing rate (rate of plant growth).</li> </ul>

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<b>Strand 4: Geometry and Measurement</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Geometric Properties</b>	1	Draw and label 2-dimensional figures given specific attributes including angle measure and side length.	2	Draw 2-dimensional figures by applying significant properties of each (e.g., Draw a quadrilateral with two sets of parallel sides and four right angles.).
			8	Recognize that a circle is a 360° rotation about a point.
			11	Draw two congruent geometric figures.
			12	Draw two similar geometric figures.
			M05-S4C4-02	Draw 2-dimensional figures to specifications using the appropriate tools (e.g., Draw a circle with a 2-inch radius.).
			M06-S4C1-01	Classify polygons by their attributes (e.g., number of sides, length of sides, angles, parallelism, perpendicularity).
			M06-S4C1-02	Draw a geometric figure showing specified properties, such as parallelism and perpendicularity.
			M06-S4C1-06	Draw triangles with appropriate labels.
			M07-S4C1-05	Draw polygons with appropriate labels.
			M08-S4C1-05	Draw regular polygons with appropriate labels.
			MHS-S4C1-13	Construct a triangle congruent to a given triangle.
	2	Solve problems by understanding and applying the property that the sum of the interior angles of a triangle is 180°.	10	Understand that the sum of the angles of a triangle is 180°.
	3	*Classify quadrilaterals by their properties.*		

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<b>Strand 4: Geometry and Measurement</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Geometric Properties</b>	4	Compare attributes of 2-dimensional figures with 3-dimensional figures by drawing and constructing nets and models.	3	Sketch prisms, pyramids, cones, and cylinders.
			4	Identify the properties of 2- and 3-dimensional geometric figures using appropriate terminology and vocabulary.
			M06-S4C1-05	Compare attributes of 2-dimensional figures with 3-dimensional figures.
	M02-S4C1-01	<b>Moved to Grade 2</b>	1	Recognize regular polygons.
	M04-S4C1-01	<b>Moved to Grade 4</b>	5	Draw points, lines, line segments, rays, and angles with appropriate labels.
	M06-S4C1-02	<b>Moved to Grade 6</b>	6	Recognize that all pairs of vertical angles are congruent.
	M04-S4C1-03	<b>Moved to Grade 4</b>	7	Classify triangles as scalene, isosceles, or equilateral.
	M06-S4C1-01	<b>Moved to Grade 6</b>	9	Identify the diameter, radius, and circumference of a circle.
	M03-S4C2-02	<b>Moved to Grade 3</b>	13	Identify the lines of symmetry in a 2-dimensional shape.
<b>2. Transformation of Shapes</b>		<b>No performance objectives at this grade level.</b>		
	M03-S4C2-01	<b>Moved to Grade 3</b>	1	Demonstrate reflections using geometric figures.
	M08-S4C2-02	<b>Moved to Grade 8</b>	2	Describe the transformations that created a tessellation.
<b>3. Coordinate Geometry</b>		<b>No performance objectives at this grade level.</b>		
	M04-S4C3-01	<b>Moved to Grade 4</b>	1	Graph points in the first quadrant on a grid using ordered pairs.
<b>4. Measurement</b>	1	*Solve problems using elapsed time.*		
	2	State an appropriate measure and degree of accuracy in a given context.	1	State an appropriate measure of accuracy for a contextual situation (e.g., What unit of measurement would you use to measure the top of your desk?).

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<b>Strand 4: Geometry and Measurement</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>4. Measurement</b>	3	Measure angles between 0 and 360 degrees.	M06-S4C4-04	Measure angles using a protractor.
	4	Solve problems involving the area of 2-dimensional figures by using the properties of parallelograms and triangles.	7	Solve problems involving the area of simple polygons.
	5	Solve problems involving area and perimeter of regular and irregular polygons using reallocation of square units.	5	Solve problems involving the perimeter of convex polygons.
			6	Determine the area of figures composed of two or more rectangles on a grid.
			7	Solve problems involving the area of simple polygons.
			M05-S1C3-04	Estimate and measure for area and perimeter.
	M05-S4C1-01	<b>Moved to Strand 4 Concept 1</b>	2	Draw 2-dimensional figures to specifications using the appropriate tools (e.g., Draw a circle with a 2-inch radius.).
	M04-S4C4-03	<b>Moved to Grade 4</b>	3	Determine relationships including volume (e.g., pints and quarts, milliliters and liters).
			4	Convert measurement units to equivalent units within a given system (U.S. customary and metric) (e.g., 12 inches = 1 foot; 10 decimeters = 1 meter).
	M04-S4C4-05	<b>Moved to Grade 4</b>	8	Describe the change in perimeter or area when one attribute (length, width) of a rectangle is altered.

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<b>Strand 5: Structure and Logic</b>				
<b>CONCEPT</b>	<b>2008 PO</b>	<b>ITEM DESCRIPTION</b>	<b>2003 PO</b>	<b>ITEM DESCRIPTION</b>
<b>1. Algorithms and Algorithmic Thinking</b>	1	*Analyze common algorithms for adding and subtracting fractions and decimals using the associative, commutative, and distributive properties.*		
	2	Develop an algorithm or formula to calculate areas and perimeters of simple polygons.	M04-S5C1-02	Develop an algorithm to calculate the perimeter of simple polygons.
			3	Develop an algorithm or formula to calculate areas of simple polygons.
	M05-S5C2-02	<b>Moved to Strand 5 Concept 2</b>	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
		<b>REMOVED</b>	2	Design simple algorithms using whole numbers.
<b>2. Logic, Reasoning, Problem Solving, and Proof</b>	1	*Analyze a problem situation to determine the question(s) to be answered.*		
	2	Identify relevant, missing, and extraneous information related to the solution to a problem.	M05-S5C1-01	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	3	*Select and use one or more strategies to efficiently solve the problem and justify the selection.*		
	4	*Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.*		
	5	*Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.*		
	6	*Summarize mathematical information, explain reasoning, and draw conclusions.*		

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Strand 5: Structure and Logic				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
<b>2. Logic, Reasoning, Problem Solving, and Proof</b>	7	*Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.*		
	8	*Make and test conjectures based on data or information collected from explorations and experiments.*		
	9	Identify simple valid arguments using <i>if...then</i> statements based on graphic organizers.	2	Identify simple valid arguments using <i>if ... then</i> statements based on graphic organizers (e.g., 3-set Venn diagrams and pictures).
			M04-S5C2-02	Identify simple valid arguments using <i>if...then</i> statements based on graphic organizers (e.g., 2-set Venn diagrams and pictures).
	10	Construct <i>if... then</i> statements to generalize rules for computation, geometric properties and algebraic functions.	1	Construct <i>if...then</i> statements.

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