Connecticut 4- 5 Mathematics Curriculum Standards

Draft 10/15/07

Curriculum Standards Including Grade-Level Expectations (GLEs)

The original ELA and mathematics frameworks, adopted in 2005-06 by the State Board of Education, have not changed and are the foundation from which everything else is developed. What has been added to the curriculum standards are "grade-level expectations" (GLEs), which further delineate the performance standards and/or expectations in the original framework. GLEs define what every student should know and be able to do in the specific content area by the end of a grade level. Additionally, the curriculum standards include a correlation to the Connecticut Mastery Test.

The curriculum standards for ELA and mathematics were reviewed by the Leadership and Learning Center (formerly the Center for Performance Assessment). Recommendations were made and are reflected in the documents now posted in draft form. The following is a summary of the comparative analysis for the English language arts and mathematics curriculum standards respectively:

The Connecticut Framework Standards and Grade-Level Expectations present the content, concepts, and skills that students need to be literate in the 21st century. The standards and GLEs are clearly aligned with national standards (as advanced by the International Reading Association and the National Council of Teachers of English) and are also similar in scope and sequence to the highly respected standards of both California and Massachusetts.

The Connecticut Framework Standards and Grade-Level Expectations present the mathematics content and concepts that students need to know in order to learn mathematics. The Component Statements and GLEs are comparable to the standards of the most esteemed mathematics teaching organization (The National Council of Teachers of Mathematics) and two states (Indiana and California) identified by the State of the State Standards 2005 and 2006 as having exemplary curricula.
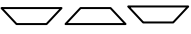
During the development of these documents, educators representing districts across the state, the RESCs, professional organizations and higher education assisted in writing and reviewing the GLEs.

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GRADE 4

Algebraic Reasoning: Patterns and Functions
Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.

State Framework	Grade-Level Expectations)	CMT Correlations
1.1 Understand and describe patterns and functional relationships.	1. Extend and compare numerical and geometric sequences and classify patterns as growing or repeating, e.g. 2, 4, 8, _, _, grows and the following sequence repeats: 2. Develop and test generalizations based on observable patterns and relationships and describe the rules for number patterns using equations, e.g., in this sequence 1, 6, 16, 36 …, to get the next number the current number can be doubled and four added to the product.	**17A.** Identify and recognize two-dimensional geometric shapes and figures, including number of angles and sides of polygons. **22A.** Extend or complete patterns, or identify rules using numbers and attributes. **22B.** Extend or complete patterns and state rules using numbers and attributes. **24A.** Identify objects that are the same or different by one attribute. **24B.** Sort objects into two groups by a common attribute. **25A.** Solve extended numerical and statistical problems.
1.2 Represent and analyze quantitative relationships in a variety of ways.	3. Describe mathematical relationships and situations, involving ratios and computation of whole numbers, in all four operations with using symbols, number sentences and equations. If $\bigtriangleup$ = ΔΔΔ Then $\bigtriangleup\bigtriangleup\bigtriangleup$ =_____	**5B.** Identify the appropriate operation or number sentence to solve a story problem. **5C.** Write story problems from addition or subtraction number sentences. **6A.** Add and subtract facts to 18. **6B.** Multiply and divide by 2, 5 and 10. **7A.** Add and subtract one- and two-digit whole numbers without regrouping. **7B.** Add one- and two-digit whole numbers with regrouping. **9A.** Solve simple story problems involving addition (with/without regrouping) or subtraction (without regrouping). **9B.** Solve simple story problems involving addition (with/without regrouping) or subtraction (without regrouping) with extraneous information. **22A.** Extend or complete patterns, or identify rules using numbers and attributes.

		22B. Extend or complete patterns and state rules using numbers and attributes.
		25A. Solve extended numerical and statistical problems.
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.	4. Represent possible values by using symbols, e.g., variables, to represent quantities in expressions and number sentences. Use number sentences (equations) to model and solve word problems. 5. Solve problems and demonstrate an understanding of equivalence in mathematical situations that reflect the commutative and associative properties of addition and multiplication of whole numbers and the distributive property.	**5 A.** Relate multiplication and division facts to rectangular arrays and pictures. **5B.** Identify the appropriate operation or number sentence to solve a story problem. **5C.** Write story problems from addition or subtraction number sentences. **6A.** Add and subtract facts to 18. **6B.** Multiply and divide by 2, 5 and 10 **7A.** Add and subtract one- and two-digit whole numbers without regrouping. **7B.** Add one- and two-digit whole numbers with regrouping. **9A.** Solve simple story problems involving addition (with/without regrouping) or subtraction (without regrouping). **9B.** Solve simple story problems involving addition (with/without regrouping) or subtraction (without regrouping) with extraneous information. **10A.** Identify the best expression to find an estimate. **11 A.** Identify a reasonable estimate to a problem. **25A.** Solve extended numerical and statistical problems.

Numerical and Proportional Reasoning

Quantitative relationships can be expressed numerically in multiple ways in order to make connections
and simplify calculations using a variety of strategies, tools and technologies.

State Framework	Grade-Level Expectations *(Italics indicate links not evident in 2005 framework)*	CMT Correlations
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships.	1. *Locate, label, compare and order numbers up to 100,000 using place value models, number lines and number patterns (including multiples of 1,000 and 10,000).* 2. Extend number patterns to determine 1,000 and 10,000 more and less than a given number in practical situations. 3. Round whole numbers up to 100,000 using number patterns, number lines, diagrams and place value models. 4. Write and describe equivalent representations of four- and five-digit whole numbers up to 100,000 and beyond, in expanded and regrouped forms. Use the forms to support computational strategies. 5. Relate multiplication and division to number patterns and models of groups and rectangular arrays. 6. Identify and define prime and composite numbers through the use of models including rectangular arrays, place value models and pictures. 7. Construct and use number lines, pictures and models, including rulers, to determine and identify equivalent ratios and fractions. 8. Locate, label and estimate (round) fractions with like and unlike denominators of 2, 3, 4, 5, 6, 8 and 10 by constructing and using models, pictures and number lines. 9. Construct and use models, pictures and number lines, including rulers to compare and order fractional parts of a whole and mixed numbers with like and unlike denominators of 2, 3, 4, 5, 6 and 8 and 10.	**1A.** Solve problems involving 10 more/less or 100 more/less than a given number. **1B.** Identify alternative forms of expressing whole numbers less than 1,000 using expanded notation. **1C.** Identify alternative forms of expressing whole numbers less than 1,000 using regrouping. **1D.** Use place value concepts to identify and compare the magnitude and value of digits in two- and three-digit numbers. **2A.** Relate fractions and decimals to pictorial representations and vice versa. **2B.** Relate fractions of regions and sets to pictures and vice versa. **2C.** Label and/or shade fractional parts of regions and/or sets. **3A.** Relate equivalent fractions to pictorial representations. **4A.** Order whole numbers less than 10,000. **4B.** Describe magnitude of two- and three-digit whole numbers, fractions, mixed numbers and decimals (tenths). **4C.** Round two- and three-digit whole numbers in context. **4D.** Identify points representing two- and three-digit whole numbers, fractions (halves, thirds, fourths) and decimals (tenths) on a number line and vice versa. **10A.** Identify a reasonable estimate to a problem. **11A.** Identify a reasonable estimate to a problem. **22A.** Identify the missing terms in a pattern, or identify rules for a given pattern using whole numbers and attributes. **22B.** Extend or complete patterns and state rules for given patterns using whole numbers and attributes.

	10. Construct and use models, pictures and number lines, including rulers, to identify wholes and parts of a whole (including a part of a group or groups) as simple fractions and mixed numbers.	**25A.** Solve extended numerical and statistical problems.
	11. Use models to represent tenths and hundredths and record the representations using equivalent ratio, fraction and decimal notation ($\frac{1}{10}$, 0.1)	
	12. Express a ratio or division problem as a fraction and describe the relationship between the divisor and the remainder written as a fraction. For example: When determining the number of groups of 3 in 14, we say $14 \div 3 = 4$ with a remainder of 2 or $4\frac{2}{3}$).	
	13. Solve practical problems involving simple ratios and proportions, e.g., determining distance on maps, by using models, pictures and number patterns	
2.2 Use numbers and their properties to compute flexibly and fluently and to reasonably estimate measures and quantities.	*14. Develop and use a variety of computation strategies including place value concepts, number lines and the commutative and associative properties to add and subtract three- and four-digit numbers and money amounts up to $1,000.00.*	**4C**. Round two- and three-digit whole numbers in context.
	15. Solve contextual problems involving addition and subtraction of whole numbers using a variety of methods, including writing appropriate number sentences (equations) and explaining the strategies used.	**5A**. Identify members of multiplication and division fact families from arrays (factors of 2, 3, 4, 5 and 10).
		5B. Identify the appropriate operation or number sentence to solve a story problem (two-digit numbers).
	16. Create story problems to match a given number sentence (equation).	**5C**. Write a story problem that matches a given addition, subtraction or multiplication sentence. Use one- and two-digit numbers for addition and subtraction. Use one-digit factors for multiplication.
	17. Recall the multiplication and division facts 1 through 10.	**6A.** Find the missing product in a multiplication equation where one factor is 2, 3, 4, 5 or 10.
	18. Write multiplication and division story problems involving basic facts and two- and three-digit by one-digit numbers to match a given number sentence and vice versa; solve the problems using strategies that include models and arrays and justify the solutions.	**6B**. Find the missing factor in a division equation where one factor is 2, 3, 4, 5 or 10.
		7A. Add and subtract two- and three-digit whole numbers and money amounts less than $10 with and without regrouping.
		7B. Multiply and divide two-digit whole numbers by one digit.
	19. Determine and explain in writing when an estimate is appropriate and whether a particular estimation strategy is reasonable or will result in an overestimate or underestimate involving computation with three- and four- digit numbers and money amounts up to $1,000.	**8A**. Add and subtract fractions with like denominators.
		9A. Solve one-step story problems involving whole numbers and money amounts. Use two- and three-digit numbers in addition and subtraction problems. Use one- and two-digit numbers in multiplication problems.

	20. Use models and pictures to add and subtract fractions with like and unlike denominators of 2, 3, 4, 5, 6, 8 and 10 and match number sentences or equations to the problems.	**9B.** Solve one-step story problems involving addition or subtraction with extraneous information. Use two-and three-digit numbers in addition and subtraction problems.
	21. Identify or write number sentences to solve simple problems involving fractions with like denominators, decimals (tenths) and mixed numbers.	**10A.** Identify the best expression to find an estimate. **11A**. Identify a reasonable estimate to a problem, including estimating change from $1, $5 and $10.
	22. Write contextual problems involving the addition and subtraction of fractions with like denominators, decimals (tenths) and mixed numbers; solve the problems and justify the solutions.	**19A**. Identify correct information from tables, bar graphs, pictographs and charts. **23A**. Solve simple one-step algebraic equations involving addition, subtraction and fact families.
	23. Estimate a reasonable answer to simple problems involving fractions, mixed numbers and decimals (tenths).	**25A.** Solve extended numerical and statistical problems.
	24. Write and solve multistep contextual problems, including problems with extraneous information and explain orally and in writing how the answers were determined.	

Geometry and Measurement
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.

State Framework	Grade-Level Expectations *(Italics indicate links not evident in 2005 framework)*	CMT Correlations
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.	1. Describe and represent polygons, solids, and other familiar two- and three-dimensional objects. 2. Compare and classify polygons based on relationships such as parallel or perpendicular lines, symmetry and congruence. 3. Make and test conjectures about polygons using geometric relationships such as symmetry and congruence.	**15A.** Estimate lengths and areas by comparing. **17A.** Identify two-dimensional geometric shapes, including number of angles and sides of polygons. **17B.** Identify, describe and draw two-dimensional geometric shapes and figures. **24A.** Solve logic, counting and classification problems involving the organization of data. **24B.** Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions. **25A.** Solve extended numerical and statistical problems.
3.2 Use spatial reasoning, location and geometric relationships to solve problems.	4. Draw and interpret simple maps with ordered pairs of numbers and/or letters in quadrant one of an x, y coordinate system and find possible paths between two points. 5. Analyze geometric reflections (flips), rotations (turns), and translations (slides) of plane figures and describe the relationship to the original figure.	
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure.	6. Use calendars and clocks to solve problems and schedule events involving elapsed time. 7. *Write and solve problems involving the conversion of simple measures of time, e.g., minutes to hours, hours to days and days to weeks and months.*	**14A.** Solve problems involving time, elapsed time (minutes and hours) and calendars. **14 B.** Solve problems involving conversions of measures of time. **25A.** Solve extended numerical and statistical problems.
	8. Use customary and metric tools and units and non-standard units to estimate, measure and solve problems involving length and perimeter to the nearest quarter-inch or half-centimeter, area, capacity, weight, temperature and volume. 9. Use estimation strategies to predict reasonable answers to measurement problems and explain the reasoning used orally and in writing.	**15A.** Estimate lengths and areas by comparing. **16A.** Measure lengths to the nearest inch, half-inch or centimeter. **16B.** Draw lengths to the nearest inch, half-inch or centimeter. **16 C.** Identify appropriate customary or metric units of measure for a given situation. **25A.** Solve extended numerical and statistical problems.

Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.		
State Framework	**Grade-Level Expectations** *(Italics indicate links not evident in 2005 framework)*	**CMT Correlations**
4.1 Collect, organize and display data using appropriate statistical and graphical methods.	1. Pose questions and develop a plan to collect data using observations, surveys and experiments to answer the questions. 2. Collect, organize and represent the data that answer the questions using simple circle graphs and broken line graphs.	**19A.** Identify correct information from tables, bar graphs, pictographs and charts. **19B.** Create bar graphs and pictographs from data in tables and charts. **24A.** Solve logic, counting and classification problems involving the organization of data. **24B.** Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions. **25A.** Solve extended numerical and statistical problems.
4.2 Analyze data sets to form hypotheses and make predictions.	3. Discuss, make predictions and write about patterns and trends in categorical and numerical data that have been represented in a variety of ways. 4. Determine the range, median, mode and mean of a set of data and describe characteristics of the data set as typical or average based on those determinations.	**19A.** Identify correct information from tables, bar graphs, pictographs and charts. **22A.** Extend or complete patterns, or identify rules using numbers and attributes. **22B.** Extend or complete patterns and state rules using numbers and attributes. **24A.** Solve logic, counting and classification problems involving the organization of data. **24B.** Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions. **25A.** Solve extended numerical and statistical problems.
4.3 Understand and apply basic concepts of probability.	5. Conduct probability experiments and express the probability based on possible outcomes, e.g., 8 out of 10 tiles chosen were red. 6. Determine and describe possible combinations, where order does not matter, e.g., when there is a choice of vanilla (V), chocolate (C) or strawberry (S) ice cream for a two-scoop cone and two different scoops are desired, the possible combinations are CV, CS, or VS.	**19A.** Identify correct information from tables, bar graphs, pictographs and charts. **21A.** Identify correct solutions to problems involving elementary notions of probability. **24A.** Solve logic, counting and classification problems involving the organization of data. **25A.** Solve extended numerical and statistical problems.

GRADE 5

Algebraic Reasoning: Patterns and Functions
Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.

State Framework	Grade-Level Expectations	CMT Correlations
1.1 Understand and describe patterns and functional relationships.	1. Represent, extend and compare geometric and numeric patterns using words, tables, graphs and equations 2. Analyze patterns and data to make generalizations, make predictions and to identify trends.	**17A.** Identify, describe and/or classify two-dimensional geometric shapes and figures. **19A.** Identify correct information from tables, bar graphs, pictographs and charts. **20 A.** Draw reasonable conclusions from data in tables, bar graphs, pictographs, circle graphs and charts. **22A.** Identify the missing terms in a pattern, or identify rules for a given pattern using whole numbers and attributes. **22B.** Extend or complete patterns and state rules for given patterns using whole numbers and attributes. **24A.** Solve logic, counting and classification problems involving the organization of data. **25A.** Solve extended numerical and statistical problems.
1.2 Represent and analyze quantitative relationships in a variety of ways.	3. Represent and describe mathematical relationships using variables or symbols in expressions, equations and inequalities 4. Describe how a change in one variable relates to a change in a second variable in context. For example: If a recipe requires two cups of flour for eight servings, the flour must be doubled for 16 servings or increased by one-half for 12 servings.	**5 A.** Identify the appropriate operation or number sentence to solve a story problem. **5B.** Write story problems from multiplication or division number sentences, using one- and two-digit numbers. **9A.** Solve one-step story problems involving whole numbers and money amounts with or without extraneous information. Use all operations. **9B.** Solve two-step story problems involving whole numbers and money amounts with or without extraneous information. **10A.** Identify the best expression to find an estimate. **22A.** Extend or complete patterns, or identify rules using numbers and attributes. **22B.** Extend or complete patterns and state rules using numbers and attributes.

		23 A. Solve simple one-step algebraic equations involving addition, subtraction, multiplication and fact families.
		25A. Solve extended numerical and statistical problems.
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.	5. Replace variables or symbols in algebraic expressions with given values and evaluate or simplify the expression, e.g., If $\square = 5$, find the value of $4 \times \square + 7$. 6. Model, write and solve one-step equations by using appropriate concrete materials that model equivalence, e.g., If $4 \times \triangle = 36$, then $\triangle$ equals 9.	**5 A.** Identify the appropriate operation or number sentence to solve a story problem. **5B.** Write story problems from multiplication or division number sentences, using one- and two-digit numbers. **9A.** Solve one-step story problems involving whole numbers and money amounts with or without extraneous information. Use all operations. **9B.** Solve two-step story problems involving whole numbers and money amounts with or without extraneous information. **10A.** Identify the best expression to find an estimate. **11 A.** Identify a reasonable estimate to a problem, including estimating change. **23 A.** Solve simple one-step algebraic equations involving addition, subtraction, multiplication and fact families. **25A.** Solve extended numerical and statistical problems.

Numerical and Proportional Reasoning

Quantitative relationships can be expressed numerically in multiple ways in order to make connections
and simplify calculations using a variety of strategies, tools and technologies.

State Framework	Grade-Level Expectations *(Italics indicate links not evident in 2005 framework)*	CMT Correlations
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships.	1. Compare, order and round whole numbers to 1,000,000 using number patterns, number lines and diagrams.	**1A**. Solve problems involving 100 more/less or 1,000 more/less than a given number.
	2. Represent whole numbers up to 1,000,000 in expanded and regrouped forms and use the forms to support computation.	**1B**. Identify alternative forms of expressing whole numbers less than 10,000 using expanded notation.
		1C. Identify alternative forms of expressing whole numbers less than 10,000 using regrouping.
	3. Construct and use models, number patterns and pictorial representations to extend place value concepts and patterns to decimals, e.g., 0.1 is one-tenth of one and 0.01 is one one-hundredth of one and one-tenth of 0.1.	**1D**. Use place value concepts to identify and compare the magnitude and value of digits in numbers.
	4. Investigate negative integers (values less than zero) using place value models, diagrams and number lines and represent negative integers in practical applications, e.g. temperatures, money and locations below sea level.	**2A**. Relate decimals (0.01-2.99) to pictorial representations and vice versa.
		2B. Relate fractions and mixed numbers to pictures and vice versa.
	5. Classify numbers as prime, composite or perfect squares and identify factor pairs using rectangular arrays.	**2C**. Identify and/or shade fractional parts of regions, sets or mixed numbers in pictures.
	6. Represent equivalent fractions, decimals, ratios and percents using models, pictures, number patterns and common factors.	**3A**. Rename equivalent fractions.
		3B. Rename equivalent mixed numbers as improper fractions and vice versa.
	7. Choose and use benchmarks to approximate locations, of fractions, mixed numbers and decimals, on number lines and coordinate grids.	**4A**. Order whole numbers less than 100,000.
		4B. Order mixed numbers, fractions and decimals.
	8. Write division problems in fraction form and round the fraction form to estimate an answer to a division problem, e.g., $^{14}\!/_3 = 4\,^2\!/_3 \approx 5$.	**4C**. Describe magnitude of whole numbers less than 100,000 and decimals.
		4D. Describe magnitude of mixed numbers and fractions.
	9. Use models and pictures to identify and compare ratios and represent ratios in equivalent fraction and decimal forms.	**4E**. Round whole numbers in context.

		4F. Round decimals. **4G**. Locate points (fractions, decimals and whole numbers) on number lines and scales **10A**. Identify the best expression to find an estimate. **11A**. Identify a reasonable estimate to a problem, including estimating change. **22A**. Identify the missing terms in a pattern, or identify rules for a given pattern using whole numbers and attributes. **22B**. Extend or complete patterns and state rules for given patterns using whole numbers and attributes. **25A**. Solve extended numerical and statistical problems.
2.2 Use numbers and their properties to compute flexibly and fluently and to reasonably estimate measures and quantities.	10. *Solve practical problems involving 10, 100, 1,000 and 10,000 more or less than a number.* 11. Estimate products and missing factors using multiples of 10, 100 and 1,000. 12. Develop and use strategies involving place value relationships, inverse operations and algebraic properties (commutative, associative and distributive) to simplify addition, subtraction and multiplication problems with three-, four- and five-digit numbers and money amounts and division by one-digit factors. 13. *Multiply and divide decimals and money amounts by whole numbers.* 14. Write and solve multistep problems for all four operations involving multidigit whole numbers and money amounts and explain how answers were determined, orally and in writing. 15. Find fractional parts of a set by using estimation, counting, grouping of objects, number patterns, equivalent ratios and division. 16. Add and subtract fractions, decimals and mixed numbers using a variety of strategies, e.g., models, mental math, equivalence and substitution: ½ + ¾ can also be solved using 0.5 + 0.75.	**5A**. Identify the appropriate operation or number sentence to solve a story problem. **5B**. Write story problems from multiplication or division number sentences, using one- and two-digit numbers. **6A.** Multiply and divide facts. **7A**. Add and subtract two-, three- and four-digit whole numbers and money amounts less than \$100. **7B**. Multiply and divide multiples of 10 and 100 by 10 and 100. **7C**. Multiply and divide two- and three-digit whole numbers and money amounts less than \$10 by one-digit numbers. **8A**. Add and subtract fractions and mixed numbers with like denominators. **9A**. Solve one-step story problems involving whole numbers and money amounts with or without extraneous information. Use all operations. **9B**. Solve two-step story problems involving whole numbers and money amounts with or without extraneous information. **10A.** Identify the best expression to find an estimate. **10B**. Identify whether and why a particular strategy will result in an overestimate or an underestimate.

	17. Construct and use models and pictorial representations to multiply common fractions and mixed numbers by whole numbers. 18. Use ratios and proportions to solve practical problems, e.g., interpreting scale drawings and maps and determining the probability of an event. 19. Use estimation to predict results and to recognize when an answer is or is not reasonable, or will result in an overestimate or underestimate and explain the reasoning used orally and in writing.	**11A**. Identify a reasonable estimate to a problem, including estimating change. **19A**. Identify correct information from tables, bar graphs, pictographs and charts. **23A**. Solve simple one-step algebraic equations involving addition, subtraction, multiplication and fact families. **25A.** Solve extended numerical and statistical problems.

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<tr><td colspan="3" align="center">Geometry and Measurement
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.</td></tr>
<tr><td align="center">State Framework</td><td align="center">Grade-Level Expectations
<i>(Italics indicate links not evident in 2005 framework)</i></td><td align="center">CMT Correlations</td></tr>
<tr>
<td>3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</td>
<td>
1. Represent the surface of three-dimensional solids using two-dimensional nets.

2. Develop formulas for finding the perimeter and area of squares, rectangles and triangles and use them to solve problems.

3. Use the attributes of parallel sides, perpendicular sides, congruent sides/angles, number and length of sides or faces and number and kinds of angles (right, acute or obtuse) to describe, classify and sort polygons and solids (cube, prism, pyramid and sphere).

4. Make and test conjectures about polygons using geometric relationships
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15A. Estimate lengths and areas.

16B. Measure and determine perimeters and areas.

17A. Identify, describe and/or classify two-dimensional geometric shapes and figures.

17B. Draw, describe and/or classify two-dimensional geometric shapes and figures.

18A. Identify lines of symmetry.

18B. Draw lines of symmetry.

18C. Identify congruent figures.

18D. Locate points on grids

24A. Solve logic, counting and classification problems involving the organization of data.

24B. Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions.

25A. Solve extended numerical and statistical problems.
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<td>3.2 Use spatial reasoning, location and geometric relationships to solve problems.</td>
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5. Use an x, y coordinate system to plot points, to estimate the distance between points and to determine the horizontal or vertical distance between two points.

6. Analyze and describe the effect that changing the dimensions (perimeter) of a polygon has on its area and vice versa.
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<td>18D. Locate points on grids</td>
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<td>3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</td>
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7. Use calendars and clocks to plan and sequence events and to solve problems involving the conversion of measures of time and elapsed time using days, hours, minutes and seconds.
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14A. Solve problems involving elapsed time (a.m. and p.m.).

14B. Solve problems involving conversions of measures of time (minutes, hours and days).

25A. Solve extended numerical and statistical problems.
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	8. Estimate and measure to solve a variety of problems that involve angles, length, area, weight, mass, temperature, capacity and volume in either metric or customary units explain the reasoning used orally and in writing.	**15A**. Estimate lengths and areas.
		16A. Measure lengths to the nearest quarter-inch or half-centimeter.
	9. Use cubic inch or cubic centimeter models to find the volume of rectangular solids.	**16C**. Identify appropriate customary or metric units of measure (length, capacity and mass) for a given situation.
	10. Solve length problems involving conversions of measure within the customary (inches, feet, yards and miles) or metric systems (millimeters, centimeters, meters and kilometers).	**16D**. Solve problems involving conversions of measures of length.
		25A. Solve extended numerical and statistical problems.

Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.		
State Framework	**Grade-Level Expectations** *(Italics indicate links not evident in 2005 framework)*	**CMT Correlations**
4.1 Collect, organize and display data using appropriate statistical and graphical methods.	1. Represent sets of data using line plots, bar graphs, double bar graphs, pictographs, simple circle graphs, stem and leaf plots and *scatter plots*. 2. *Compare different representations of the same data set and evaluate how well each kind of display represents the features of the data.*	**19A.** Identify correct information from tables, bar graphs, pictographs and charts. **19B.** Create bar graphs and pictographs from data in tables and charts. **20A.** Draw reasonable conclusions from data in tables, bar graphs, pictographs, circle graphs and charts. **20B.** State a conclusion and explain why a claim is or is not reasonable, based on the data. **24B.** Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions. **25A.** Solve extended numerical and statistical problems.
4.2 Analyze data sets to form hypotheses and make predictions.	3. Design and conduct surveys of a representative sample of a population and use the data collected to begin to make inferences about the general population. 4. *Determine the mean, mode and median of a data set and explain in writing, how they are affected by a change in the data set.*	**19A.** Identify correct information from tables, bar graphs, pictographs and charts. **20A.** Draw reasonable conclusions from data in tables, bar graphs, pictographs, circle graphs and charts. **20B.** State a conclusion and explain why a claim is or is not reasonable, based on the data. **24A.** Solve logic, counting and classification problems involving the organization of data. **24B.** Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions. **25A.** Solve extended numerical and statistical problems.
4.3 Understand and apply basic concepts of probability.	5. Design and conduct probability experiments and simple games of chance to test predictions about outcomes and fairness. 6. Determine and describe possible outcomes and express the likelihood of events as a fraction. 7. Determine and describe possible outcomes using permutations, where order does matter, e.g., when there is a choice of vanilla (V), chocolate (C) or strawberry (S) ice cream for a three-scoop cone, there are two possible ways to have the chocolate scoop on top CVS or CSV.	**21A.** Identify correct solutions to problems involving elementary notions of probability. **21 B.** Solve problems involving elementary notions of probability and fairness, including justifying solutions **24A.** Solve logic, counting and classification problems involving the organization of data. **25A.** Solve extended numerical and statistical problems.

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