

GRADE 6 MATHEMATICS CURRICULUM

The Grade 6 mathematics curriculum is outlined through its connections to the State of Connecticut Frameworks for mathematics education. The objectives taught are specific learning goals that are achieved through the lessons and activities indicated and are assessed by the Connecticut Mastery Test as well as a collection of other assessments as indicated. This curriculum is in a draft stage and as units are taught, updates are made to the curriculum.

Content Standards:

1. Number Sense
2. Operations
3. Estimation and Approximation
4. Ratio, Proportion and Percent
5. Measurement
6. Spatial Relations and Geometry
6. Probability and Statistics
7. Patterns
8. Algebra
9. Discrete Mathematics

Grade 6
Content Standard #1: Number Sense

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Locate, identify, and order numbers on number lines, scales and grids (include negative integers and positive rational numbers)	a. Locate points on number lines and scales, including fractions, decimals and integers *4f b. Locate and draw points on grids *18e	MiC: Fraction Times Dry and Wet Numbers *Supplemental Skill Worksheets	4f 18e	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Represent fractions, mixed number, decimals, and percents in a variety of equivalent forms (concrete, pictorial, and symbolic representations)	a. Identify alternative forms of expressing numbers using expanded notation *1b b. Relate fractions, decimals, and percents to their pictorial presentations and vice versa. *2a c. Construct pictorial representations of fractions, decimals, and percents. *2b d. Rename fractions and mixed numbers as equivalent decimals and vice versa. *3a e. Rename fractions and decimals as equivalent percents and vice versa. *3b	MiC: Fraction Times More or Less *Supplemental Skill Worksheets	1b 2a 2b 3a 3b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #1: Number Sense

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
3. Explore real world situations to develop an understanding of the meaning of integers, fractions, decimals and percents	a. Describe the magnitude of whole numbers and decimals. *4c b. Describe the magnitude of fractions and mixed numbers. *4d	MiC: All	4c 4d	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
4. Develop and apply number theory concepts (primes, factors, multiples, etc) in real world problem situations	a. Identify a common multiple for a given set of numbers and use as a common denominator when comparing, ordering, adding, or subtracting fractions. b. Identify common factors for a given set of numbers and use in order to simplify fractions. c. Round whole numbers, fractions and decimals in a context. *4e	MiC: Fraction Times	4e	"The Video Problem" "Zip Codes" Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #1: Number Sense

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
5. Extend the understanding of the relationship among fractions, decimals, and whole numbers to include percents and integers	a. Order whole numbers and decimals. *4a b. Order fractions and mixed numbers. *4b	MiC: Dry and Wet Numbers Fraction Times More or Less *Supplemental Skill Worksheets	4a 4b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
6. Use real life experiences, physical materials, and technology to construct number meanings		MiC: All		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #1: Number Sense

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
7. Develop and use an intuitive sense of the magnitude of numbers greater than 1,000,000		MiC: Reallotment		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #2: Operations

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
<p>1. Develop fluency with all operations with:</p> <ul style="list-style-type: none"> a) multi-digit whole numbers b) decimals c) fractions and mixed numbers d) integers 	<ul style="list-style-type: none"> a. Add, subtract 2-, 3-, and 4-digit whole numbers and decimals *7a b. Multiply and divide 2- and 3- digit whole numbers, money amounts and decimals by 1- digit numbers and decimals. *7c c. Add and subtract fractions and mixed numbers with reasonable and appropriate denominators. *8a d. Multiply whole numbers and fractions by fractions and mixed numbers. *8b e. Use strategies to divide fractions informally 	<p>MiC: Fraction Times Dry and Wet Numbers More or Less</p> <p>*Supplemental Skill Worksheets</p>	<p>7a 7c 8a 8b 9a 9b 9c 9d</p>	<p>Teacher observation</p> <p>Rubrics for each notebook section</p> <p>Supplemental Skill-based Materials</p> <p>MIC: Balanced assessment Unit Assessment Try This Quizzes</p>
<p>2. Multiply and divide whole numbers and decimals by 10, 100, and 1,000</p>	<ul style="list-style-type: none"> a. Develop strategies for and an intuitive sense of multiplying and dividing by powers of 10. b. Convert between units of measure within the Metric System 	<p>MiC: Reallotment</p> <p>*Supplemental Skill Worksheets</p>	<p>7b</p>	<p>Teacher observation</p> <p>Rubrics for each notebook section</p> <p>Supplemental Skill-based Materials</p> <p>MIC: Balanced assessment Unit Assessment Try This Quizzes</p>

Grade 6
Content Standard #2: Operations

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
3. Use the Order of Operations	a. Use conventional rules and grouping symbols to perform a sequence of calculations.	MiC: Expressions and Formulas Dry and Wet Numbers *Supplemental Skill Worksheets	23 b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
4. Identify and use inverse relationships of arithmetic operations	a. Use reverse operations to find the input for a given output b. Solve problems using the relationship between a mathematical procedure and its inverse	MiC: Expressions and Formulas *Supplemental Skill Worksheets		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
5. Develop and explain procedures for performing operations with rational numbers and percents	a. Solve multi-step problems and explain how the solution was determined. *9e	MiC: Fraction Times More or Less *Supplemental Skill Worksheets	9e	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials

Grade 6
Content Standard #2: Operations

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
				MIC: Balanced assessment Unit Assessment Try This Quizzes
6. Use estimation skills to check the reasonableness of answers		MiC: All		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
7. Select and use an appropriate method for computing from among estimation, paper and pencil, and technology in real-world problem situations		MiC: All		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #3: Estimation & Approximation

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Develop, apply, and explain a variety of estimation strategies in problem situations involving quantities and measures	1. Identify the best expression to find an estimate. *10a 2. Determine a reasonable estimate and describe the strategy used to make the estimate. *10c (Strategies might involve rounding, compatible numbers, breaking apart numbers, etc.)	MiC: Fraction Times Reallotment	10a 10c	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer\	1. Use estimation to defend decisions. *11b	MiC: Fraction Times Reallotment	11b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
3. Use estimation to predict outcomes and determine reasonableness of results	1. Estimate a reasonable answer to a problem. *11a	MiC: All	11a	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials

Grade 6
Content Standard #3: Estimation & Approximation

				<p>MIC: Balanced assessment Unit Assessment Try This Quizzes</p>
<p>4. Determine whether a given estimate is an overestimate or an underestimate</p>	<p>1. Identify whether and why a particular strategy will result in an overestimate or an underestimate. *10b</p>	<p>MiC: More or Less]</p> <p>*Supplemental Skill Worksheets</p>	<p>10b</p>	<p>Teacher observation</p> <p>Rubrics for each notebook section</p> <p>Supplemental Skill-based Materials</p> <p>MIC: Balanced assessment Unit Assessment Try This Quizzes</p>
<p>5. Estimate lengths, areas, perimeters, quantities, volumes, and angle measures</p>		<p>MiC: Reallotment</p> <p>*Supplemental Skill Worksheets</p>	<p>15</p>	<p>Teacher observation</p> <p>Rubrics for each notebook section</p> <p>Supplemental Skill-based Materials</p> <p>MIC: Balanced assessment Unit Assessment Try This Quizzes</p>

Grade 6
Content Standard #4: Ratio, Proportion & Percent

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Represent percents, including those less than one and greater than one hundred, in a variety of ways, including pictorial and symbolic		MiC: Fraction Times *Supplemental Skill Worksheets	2a 2b 3a 3b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Find percents of whole numbers	1. Find percents of whole numbers or the percent a given number is of another number.	MiC: More or Less *Supplemental Skill Worksheets	13a	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
3. Develop proportional thinking using concrete and pictorial models	1. Analyze the effect a systematic change in dimension has on area, perimeter, and volume	MiC: Reallotment *Supplemental Skill Worksheets		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials

Grade 6
Content Standard #4: Ratio, Proportion & Percent

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
				MIC: Balanced assessment Unit Assessment Try This Quizzes
4. Use concrete materials to formalize a concept of rate				
5. Estimate solutions to problems with ratio, proportion, and percent		MiC: Fraction Times Reallotment		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
6. Apply and explain methods of solving problems involving ratio, proportion, and percent	<ol style="list-style-type: none"> 1. Solve problems involving ratio. *12a 2. Solve problems involving proportions. *12b 3. Solve problems involving percent. *13b 3a. Calculate original price, amount discount, sale price and tax on items. 	MiC: More or Less Reallotment	12a 12b 13b 9e	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment

Grade 6
Content Standard #4: Ratio, Proportion & Percent

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
	3b. Identify and solve problems involving percent increase and decrease.			Unit Assessment Try This Quizzes
7. Use appropriate technology to enhance the development of concepts of rate, proportion, and percent				

Grade 6
Content Standard #5: Measurement

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Select and use appropriate tools to make accurate measurements	1. Understand which tools are appropriate to estimate and measure area, perimeter and volume. 2. Measure/determine perimeter, area and volume. *16b	MiC: Reallotment	16b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Use both metric and customary units of measure and convert units within a system	1. Understand the structure and use of Metric and customary systems of measurement 2. Solve problems involving the conversion of units of measure, including time. *16a	MiC: Reallotment *Supplemental Skill Worksheets	16a	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
3. Express answers using appropriate units of measure	1. Identify appropriate customary or metric units of measure (length, capacity, mass) for a given situation. *16c	MiC: Reallotment *Supplemental Skill Worksheets	16c	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #5: Measurement

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
4. Develop and apply formulas in real-world problem situations involving measurement	1. Generalize formulas and procedures for determining the areas of rectangles, triangles, parallelograms, and circles.	MiC: Reallotment	9e	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
5. Use significant digits appropriately in problem situations				
6. Use appropriate technology to enhance understanding of measurement concepts	1. Develop the concept of pi using the Geometer's Sketchpad	MiC: Reallotment Geometer's Sketchpad		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #6: Spatial Relations & Geometry

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Identify, describe, compare and classify plane and solid geometric figures	a. Identify and draw geometric shapes and figures. *17a b. Describe and classify geometric shapes and figures. *17b c. Compare the areas of shapes using a variety of strategies and measuring units. d. Estimate and compute areas of geometric shapes e. Generalize formulas and procedures for determining the areas of rectangles, triangles, parallelograms, and circles.	MiC: Reallotment	17a 17b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Understand and apply the concepts of symmetry, similarity, and congruence	a. Identify, draw and describe lines of symmetry *18b b. Identify and describe congruent figures. *18d	MiC: Reallotment	18b 18d	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #6: Spatial Relations & Geometry

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
3. Identify and draw geometric transformations (translations, reflections, rotations, and dilations)	a. Identify and draw geometric transformations *18a b. Use geometric transformations to create and work with tessellation patterns.	MiC: Reallotment	18a	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
4. Relate two-dimensional and three-dimensional geometric shapes using shadows, perspectives, and projections			18c	
4. Understand and apply the properties of lines and planes, including parallel and perpendicular lines, and intersecting lines and planes and their angles of incidence				

Grade 6
Content Standard #6: Spatial Relations & Geometry

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
6. Investigate, explore, and describe the geometry in nature and real-world applications using models, manipulatives, and appropriate technology		MiC: Reallotment *Geometer Sketchpad		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #7: Probability and Statistics

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Estimate and solve problems involving elementary notions of probability and fairness	a. Solve problems involving elementary notions of probability and fairness, including justifying answers. *21a b. Solve problems involving expected outcomes or predictions. *21b		21a 21b	
2. Express probabilities in multiple ways				
3. Select appropriate measures of central tendency	a. Distinguish between different measures of central tendency (mean, median, and mode) b. Identify appropriate measure of central tendency based on context of problem.	MiC: Dealing with Data *Supplemental Skill Worksheets	9c 20b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MiC: Balanced assessment Unit Assessment Try This Quizzes
4. Make and test predictions			21b	
5. Estimate and solve problems involving means, medians, and modes		MiC: Dealing with Data *Supplemental Skill Worksheets	20b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MiC:

Grade 6
Content Standard #7: Probability and Statistics

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
				Balanced assessment Unit Assessment Try This Quizzes
6. Generate, collect, organize, display, and analyze data	a. Identify correct information from graphs, tables and charts. *19a b. Create bar graphs, line graphs, and stem and leaf plots from data in tables and charts. *19b	MiC: Tracking Graphs Dealing with Data *Supplemental Skill Worksheets	19a 19b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
7. Select appropriate graphical representations from line, bar, circle, stem-and-leaf, and box-and-whisker graphs	a. Compare different representations, and understand their differences and similarities. b. Solve problems by choosing appropriate statistical measures and graphs	MiC: Dealing with Data/ Fraction Times	19b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
8. Construct and defend reasonable conjectures from tables, charts, and graphs	a. Build an argument based on statistical measures and graphs. b. Draw and justify reasonable conclusions from graphs,	MiC: Expressions and Formulas Dealing with Data Tracking Graphs	19a 20a	Teacher observation Rubrics for each notebook section

Grade 6
Content Standard #7: Probability and Statistics

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
	tables and charts. *20a			Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
9. Recognize patterns and trends and make predictions based on data from tables, graphs, and charts		MiC: Expressions and Formulas Tracking Graphs		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
10. Use technology to reinforce and enhance understanding of probability and statistics	a. Create tables and graphs using spreadsheet software. b. Use spreadsheet software to compare different graphical representations and to understand their differences and similarities.			

Grade 6
Content Standard #8: Patterns

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Describe, extend, analyze, and create a wide variety of patterns, including those which are numerical, geometrical, and statistical	a. Extend or complete patterns involving numbers and attributes, and identify or state rules for given patterns. *22	MiC: Expressions and Formulas	22	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Represent and describe pattern relationships using tables, rules, simple equations, and graphs	a. Generalize from patterns to symbolic relationships	MiC: Dealing with Data/ Expressions and Formulas Tracking Graphs		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Use patterns and relationships to represent and solve problems				
4. Analyze tables and graphs to identify patterns and relationships and justify predictions	a. Interpret relationships displayed in tables	MiC: Tracking Graphs/ Expressions and Formulas		Teacher observation Rubrics for each notebook section

Grade 6
Content Standard #8: Patterns

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
				Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
5. Use appropriate technology to extend understanding of patterns				
6. Connect and apply patterns to real-world situations		MiC: Tracking Graphs		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #9: Algebra and Functions

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Understand and use variables, expressions, and equations to represent numerical situations	a. Develop an understanding of <i>equation</i> and <i>variable</i> . b. Use word variables to describe a formula or procedure c. Use formulas in any representation (arithmetic trees, words, arrow language) to solve problems	MiC: Expressions and Formulas Reallotment *Supplemental Skill Worksheets	23d	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Solve simple linear equations using informal methods (e.g. "guess and check")	a. Use pictures, words or symbols to solve problems b. Use exchanging and substituting to solve problems. c. Solve systems of equations informally d. Describe and perform a series of calculations using an arrow string and arithmetic strings e. Rewrite numerical expressions to facilitate calculation	MiC: Expressions and Formulas *Hands-on- Equations *Supplemental Skill Worksheets	23a	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
4. Understand and use number lines		MiC: Dry and Wet Numbers *Supplemental Skill Worksheets		Teacher observation Rubrics for each notebook section

Grade 6
Content Standard #9: Algebra and Functions

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
				Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
5. Represent ordered pairs on a coordinate plane	a. Locate and draw points on grids. *18e	MiC: Expressions and Formulas Tracking Graphs	18e	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
6. Connect and apply algebraic expressions and equations to real- world situations	a. Write story problems from equations involving fractions, decimals, and unknowns. *5b b. Represent situations with algebraic expressions. *23b	MiC: Expressions and Formulas Tracking Graphs Dry and Wet Numbers	5b 23b	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes

Grade 6
Content Standard #10: Discrete Mathematics

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
1. Develop, use, and explain strategies for games, puzzles, counting, and logic problems	a. Develop, use, and explain strategies for games, puzzles, counting, and logic problems	MiC: Reallotment Dry and Wet Numbers *Balance Puzzles *Supplemental Skill Worksheets		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
2. Organize data using a variety of formats such as tree diagrams and Venn diagrams	a. organize data using a variety of formats such as tree diagrams and Venn diagrams b. Solve problems involving the organization of data. *24	MiC: Expressions and Formulas	24	Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes
3. Develop concepts of combinations and permutations	a. develop concepts of combinations and permutations			

Grade 6
Content Standard #10: Discrete Mathematics

Connecticut Framework	Objectives	Lessons/Activities	CMT	Assessment
4. Develop and use inductive and deductive reasoning	a. develop and use inductive and deductive reasoning	MiC: All *Balance Puzzles *Supplemental Skill Worksheets		Teacher observation Rubrics for each notebook section Supplemental Skill-based Materials MIC: Balanced assessment Unit Assessment Try This Quizzes