

*Cliffside Park Public Schools*

	September	October	November	December	January	February	March	April	May	June
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**GRADE 6  
MAP  
of  
MATH CURRICULUM TOPICS**

	September	October	November	December	January	February	March	April	May	June
<b>GRADE 6 UNITS OF STUDY &amp; BENCHMARKS</b>	<b>Decimals:</b> -compare, order, round whole numbers & decimals -add & subtract, multiply & divide whole numbers & decimals -estimate sums and differences -write & evaluate expressions -use exponents -estimate products & quotients	<b>Data:</b> -read & interpret data in a graph Organize & display data in a table or graph Find range, median, mode for data <b>Number Theory &amp; Fraction Concepts:</b> -Identify prime & composite numbers Find least common denominator of fractions Simplify fractions & mixed numbers Compare & order fractions & mixed numbers	<b>Fractions:</b> -add & subtract fractions & mixed numbers -use properties of addition -estimate sums and differences of mixed numbers -multiply fractions & mixed numbers -estimate products of fractions & mixed numbers -identify & use properties of multiplication	<b>Fractions:</b> -divide fractions & mixed numbers  <b>Measurement:</b> -estimate length, capacity, weight, temperature & mass Choose appropriate units of measurement -measure length -change between units of length, capacity, weight, temperature and mass	<b>Algebra:</b> -write and evaluate algebraic expressions -use order of operations to evaluate expressions -represent situations -write and solve equations	<b>Geometry:</b> -measure, draw and classify angles -identify, classify, describe geometric figures -identify congruent and similar figures -identify transformations of figures -find the missing angle of a triangle or quadrilateral	<b>Perimeter, Area &amp; Volume :</b> -find perimeter and circumferences -find area -find surface area -find volumes	<b>Ratios &amp; Proportions:</b> -use rates and unit prices -use proportions  <b>Percents:</b> -relate percents, fractions & decimals -find a percent of a number and what percent one number is of another -calculate sales tax, discounts, and interest -interpret and make circle graphs	<b>Using Percent:</b> -interpret and make circle graphs -find percents  <b>Probability:</b> -find the probability of an event -find the probability that either of 2 events will occur -use tree diagrams and find probability that 2 events will occur	<b>Integers and Rational Numbers:</b> -compare and order integers & rational numbers -add, subtract, multiply & divide rational numbers -graph ordered pairs and functions in 4 quadrants – solve equations using integers
	<p><b>COMPUTATIONAL FLUENCY</b>  <b>SPIRALING (Through daily review)</b>  <b>PROBLEM OF THE DAY (use strategies to solve problems)</b></p>									

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*CURRICULUM FOCAL POINTS (NCTM)	<p><b>September</b></p> <p><b>Number and Operations: Developing an understanding of and fluency with multiplication and division of fractions and decimals</b></p> <p>Students use the meanings of fractions, multiplication and division, and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions and explain why they work. They use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain the procedures for multiplying and dividing decimals. Students use common procedures to multiply and divide fractions and decimals efficiently and accurately. They multiply and divide fractions and decimals to solve problems, including multistep problems and problems involving measurement.</p>			<p><b>December</b></p> <p><b>Number and Operations: Connecting ratio and rate to multiplication and division</b></p> <p>Students use simple reasoning about multiplication and division to solve ratio and rate problems (e.g., “If 5 items cost \$3.75 and all items are the same price, then I can find the cost of 12 items by first dividing \$3.75 by 5 to find out how much one item costs and then multiplying the cost of a single item by 12”). By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative sizes of quantities, students extend whole number multiplication and division to ratios and rates. Thus, they expand the repertoire of problems that they can solve by using multiplication and division, and they build on their understanding of fractions to understand ratios. Students solve a wide variety of problems involving ratios and rates.</p>			<p><b>March</b></p> <p><b>Algebra: Writing, interpreting, and using mathematical expressions and equations</b></p> <p>Students write mathematical expressions and equations that correspond to given situations, they evaluate expressions, and they use expressions and formulas to solve problems. They understand that variables represent numbers whose exact values are not yet specified, and they use variables appropriately. Students understand that expressions in different forms can be equivalent, and they can rewrite an expression to represent a quantity in a different way (e.g., to make it more compact or to feature different information). Students know that the solutions of an equation are the values of the variables that make the equation true. They solve simple one-step equations by using number sense, properties of operations, and the idea of maintaining equality on both sides of an equation. They construct and analyze tables (e.g., to show quantities that are in equivalent ratios), and they use equations to describe simple relationships (such as <math>3x = y</math>) shown in a table.</p>			
	<p><b>Connections to the Focal Points</b></p> <p><b>Number and Operations:</b> Students’ work in dividing fractions shows them that they can express the result of dividing two whole numbers as a fraction (viewed as parts of a whole). Students then extend their work in grade 5 with division of whole numbers to give mixed number and decimal solutions to division problems with whole numbers. They recognize that ratio tables not only derive from rows in the multiplication table but also connect with equivalent fractions. Students distinguish multiplicative comparisons from additive comparisons.</p> <p><b>Algebra:</b> Students use the commutative, associative, and distributive properties to show that two expressions are equivalent. They also illustrate properties of operations by showing that two expressions are equivalent in a given context (e.g., determining the area in two different ways for a rectangle whose dimensions are <math>x + 3</math> by 5). Sequences, including those that arise in the context of finding possible rules for patterns of figures or stacks of objects, provide opportunities for students to develop formulas.</p> <p><b>Measurement and Geometry:</b> Problems that involve areas and volumes, calling on students to find areas or volumes from lengths or to find lengths from volumes or areas and lengths, are especially appropriate. These problems extend the students’ work in grade 5 on area and volume and provide a context for applying new work with equations.</p>									

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<b>MATHEMATIC VOCABULARY</b>	Algebraic expression Decimal Equivalent decimals Evaluate Place Value Variable Whole number Base Compatible numbers Dividend Divisor Exponent Power of 10 Quotient remainder	Interval Mean Median Mode Population Random sample Range Sample Divisible Equivalent fractions Greatest common factor (GCF) Least Common Denominator (LCD) Least common multiple (LCM) Multiple Simplest form	Associative property of addition Commutative property of addition Identity property of addition Like denominators Unlike denominators Distributive property of multiplication over addition Distributive property of multiplication over subtraction Identity property of multiplication Multiplicative inverse property Reciprocal Zero property of multiplication	Capacity Celcius Fahrenheit Formula Mass Metric system Volume Weight	Axis/axes Coordinate Equation Finction Order of operations Ordered pair Origin Solution variable	Adjacent angles Alternate interior angles Complementary angles Corresponding angles Supplementary angles Transversal Vertical angles	Base of a cylinder Base of a prism Circumference Edge Face Height of a triangle Height of a parallelogram Vertex	Corresponding angles Corresponding sides Cross product Equivalent ratios Proportion Ratio Similar figures Central angle Circle graph Discount Interest Interest rate Percent Principal Repeating decimal Sale price Sales tax Venn diagram	Central angle Circle graph Discount Interest Interest rate Percent Principal Repeating decimal Sale price Sales tax Venn diagram Counting principle Event Outcome Probability Sample space Trial	Absolute value integer Negative integer Opposite integer Positive integer Rational number
<b>ACTIVITIES</b>	-use flyers from stores and have students “go shopping”; using processes, add, subtract, estimate, etc.	-decide on a topic; develop survey; graph results  -locate fractions in recipes or on food containers	-adjust recipes to increase servings	-measure and record rainfall for the month (standard & metric)  -record the daily temperatures for the month (standard and metric)	-create tables and patterns  -draw rectangles, squares, triagles on coordinate graphs; find ordered pairs for endpoints	-find angles in classroom  -using alphabet chart, identify lines of symmetry in letters	--find areas of different rooms in the school  -design plans for a new classroom	- use store flyers and calculate prices using percent of discounts	-find probability of numbers coming up when rolling the dice or using a spinner	-use counters to perform operations
	Math Journals Writing Word Problems									

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<b>ADDITIONAL CROSS-CURRICULAR OPPORTUNITIES</b>	-explore another country's currency; using exchange rate, calculate value of a dollar (Social Studies)	-divide classes into groups to represent each continent; research mountains and graph heights; compare all graphs; find range, median, mode for heights in each continent (Science, Social Studies)	-create a powerpoint of the properties of addition and subtraction with examples (Technology)	-find the weight and mass of different kinds of rocks (Science)	-using a map and formulæ Distance = Rate x Time, calculate how long it will take to travel from Cliffside Park to other areas (Social Studies)	-identify shapes and polygons in buildings of our nation's capitol (Social Studies)  -look at pictures of paintings and look for angles (Art)  -form mosaic patterns with shapes that tessellate (Art)	find shape and dimensions of gymnasium: estimate how long it would take to walk around it, how much surface tile is needed to cover the floor, amount of space enclosed (Physical Education)	-pick a sports team: calculate ration of coaches to players (Physical Education)  -Explore ration of Congressmen/women to constituents in Congressional districts in NJ (Social Studies)	-predict most common letter in alphabet; tally # of letter occurrences from 20-word samples from newspaper (LAL) -find percent of planets that have certain gases in their atmosphere (Science)	-compare average surface temperatures for certain planets (Science)  -add steps taken forward (positive) and backward (negative) (Physical Education)  -add using different color brush strokes of paint or markers (Art)
	Additional LAL: - see Marilyn Burns List (Appendix) - see Authentic Literature List (Appendix) - <i>Reading Aloud Across the Curriculum</i> (Laminak & Wadsworth, 2006) Music: - Math Songs CD Technology: - Math Traveler, - Math Tool Chest - Study Island - Learnia									
<b>ACCOMMODATIONS (ESL &amp; SPECIAL EDUCATION)</b>	Number cards  Number line to order decimals  Place value models  Graph paper  Grid paper  Play money	Line plot  Connecting cubes  Line graphs  Multiplication charts  Graph paper	Paper folding for fractions  Fraction strips  Ruler for adding and subtracting mixed numbers  Place value models	Build conversion charts  Outline algorithms for converting units of measurement	Write expressions on paper and sequence parts to fit a desired result  Create a coordinate graph on the floor and students model ordered pairs	Cut out angles  Graph paper  String to explore open figures, closed figures, polygons	Graph paper  Use circular objects and rulers to explore diameter and circumference  Number cubes to build figures	Use counters and cups to build ratios and proportions  Make scale drawing of classroom  Graph paper to draw different sizes of similar triangles	Number cubes  Spinners to find probability  Dice	Number line  Two color counters  Human number lines

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	<ul style="list-style-type: none"> <li>• e-glossary (<a href="http://www.mhschool.com/math">www.mhschool.com/math</a>)</li> <li>• Visual Models</li> <li>• Concrete Objects</li> <li>• Pictorial Models</li> <li>• Leading Questions</li> <li>• Act Out</li> <li>• Tools (rulers, measuring cups, scales, etc.)</li> <li>• Pattern Blocks</li> <li>• <b>Cooperative Learning: Team Assisted Individualization (TAI)</b> – heterogenous groups helping each other</li> <li>• <b>Explicit Systematic Instruction:</b> teacher demonstration, thinking aloud, about decision-making, opportunities for student questions and answers</li> <li>• Power Facts (Macmillan/McGraw-Hill)</li> <li>• Chapter Prescription Table (Macmillan/McGraw-Hill)</li> <li>• Bridge the Gaps (Macmillan/McGraw-Hill)</li> <li>• Guided &amp; Strategy groups</li> </ul>									
ASSESSMENT	Formative: conversation, observation, journal writing, self-assessment and daily work Summative: Chapter Tests/Quizzes, Minute Math Book Performance-based: Hands-on Activities SmartBoard Activities Study Island Learnia									
RESOURCES	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapters 1 & 2	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapters 3 & 4	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapters 5 & 6A	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter 6B & 7	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter 8	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter 10	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter 11 & 7	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter s 12 &13A	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapters 13B & 14	Macmillan/ McGraw-hill <i>Mathematics:</i> <i>Grade 6 (2002)</i> -Chapter 9

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	Hyde, Arthur. <i>Comprehending Math.: Adapting Reading Strategies to Teach Mathematics, K-6.</i> 2006 Murray, Miki. <i>The Differentiated Math Classroom: A Guide for Teachers K-8.</i> 2007. <i>Math Process Standards Series.</i> 2007. Heinemann. O'Connell, Susan. <i>Now I Get It: Strategies for Building confident and Competent Mathematicians, K-6.</i> 2005. Websites: <ul style="list-style-type: none"> <li>• <a href="http://www.mathblaster.com">www.mathblaster.com</a></li> <li>• <a href="http://www.atmath.com">www.atmath.com</a></li> <li>• <a href="http://www.funbrain.com">www.funbrain.com</a></li> <li>• <a href="http://www.mhschool.com/math">www.mhschool.com/math</a></li> <li>• <a href="http://www.scholastic.com">www.scholastic.com</a></li> <li>• <a href="http://www.elearning4kids.com">www.elearning4kids.com</a></li> <li>• <a href="http://www.enchantedlearning.com">www.enchantedlearning.com</a></li> <li>• <a href="http://www.nctm.org">www.nctm.org</a></li> <li>• <a href="http://www.mathcats.com">www.mathcats.com</a></li> </ul> SmartBoard Learnia Study Island										
NJCCCS	4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C 4.2.6.C 4.3.6.A 4.3.6.B 4.3.6.C 4.3.6.D 4.4.6.A 4.4.6.B 4.4.6.C 4.4.6.D	4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C 4.2.6.D 4.2.6.E	4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C 4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C 4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C	4.1.6.A 4.1.6.B 4.1.6.C 4.4.6.B	4.1.6.A 4.1.6.B 4.1.6.C 4.3.6.A 4.3.6.B 4.3.6.C 4.3.6.D
	4.3.6.B 4.5.6.A 4.5.6.B 4.5.6.C 4.5.6.D 4.5.6.E 4.5.6.F										
NCTM STANDARDS	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,5,6,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10	

\* The set of three **curriculum focal points** and related connections for mathematics in grade 6. These topics are the recommended content emphases for

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this grade level. It is essential that these focal points be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.