SIXTH GRADE MATHEMATICS CURRICULUM

Course 50610

Sixth grade students will deepen their understanding of the use of ratios in problem solving as well as multiply and divide fractions. They will continue to extend their fluency or mathematical operations with multi-digit numbers. The course will cover the relationships between dependent and independent variables. Students will extend their previous understanding to algebraic expressions and the process of solving one-variable equations. They will solve problems of area, surface, and volume. Coordinate graphing in all 4 quadrants will be used to solve problems. Students will also learn about statistical variability and be able to summarize a distribution of data.

SIXTH GRADE MATHEMATICS OUTLINE:

Goals	Skills	Summative Assessments	Time Frame	Main Resources
• Understand ratio concepts and use ratio reasoning to solve problems. • Develop and/or apply number theory concepts to find common factors and multiples. • Identify and choose appropriate processes to compute fluently with multi-digit numbers. • Apply and extend previous understandings of arithmetic to algebraic expressions. • Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems. • Use a set of numerical data to develop an understanding of and recognize statistical variability.	• Apply and extend previous understandings of multiplication and division to divide fractions by fractions. • Apply and extend previous understandings of numbers to the system of rational numbers. • Represent and analyze quantitative relationships between dependent and independent variables. • Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume. • Graph points in all four quadrants on the coordinate plane to solve real world and mathematical problems. • Use numerical data and apply statistical properties to summarize and describe a distribution.	Mid-year and End of Year Benchmark Assessments, PSSA	1-year	Glencoe Math: Course 1 ©2016

SIXTH GRADE MATHEMATICS MAP:

TIME FRAME	BIG IDEAS	CONCEPTS	ESSENTIAL QUESTIONS	STANDARDS	OBJECTIVES	DIFFERENTIATION	ASSESSMENT
Unit 1 (Weeks 1-4)	• Data can be modeled and used to make inferences.	1. Collect data 2. Display data 3. Interpretation of Data	• How can data be organized and represented to provide insight into the relationship between quantities? • How does the type of data influence the choice of display?	CC.2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.	• To find data landmarks, and to compare the median and mean for sets of data. • To create, read, and interpret line plots, stem-and-leaf plots, broken-line graphs, bar graphs, step graphs, and circle graphs. • To analyze data displays and explain ways in which data can be presented to misrepresent or mislead.	Provide lesson specific suggestions to help English language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	sampling/survey on ixl lesson 10 worksheet 1.pdf lesson 10 worksheet 2.pdf lesson 10 worksheet 3.pdf lesson 11 worksheet 1.pdf lesson 9 worksheet 1.pdf lesson 9 worksheet 2.pdf lesson 9 worksheet 3.pdf lesson 6 worksheet 1.pdf lesson 6 worksheet 2.pdf lesson 6 worksheet 3.pdf fish stem and leaf worksheet IXL Stem and Leaf Plot stem-and-leaf-plot-worksheet.pdf mean-avg_TWTMM.pdf mean-avg2_TWTMR.pdf mean-avg-word-problems_TWTMN.pdf mean-median-mode-range-boxes_TWTNT.pdf mean-median-mode-range-tiles_TWTNR.pdf median-mode-range-tiles_TWTNN.pdf line-plot-1_TWNMZ.pdf line-plot-2_TWNNB.pdf line-plot-3_TWNNF.pdf line-plot-4_TWNNN.pdf line-plot-5_TWNND.pdf line-plot-6_TWNNQ.pdf Assessment Handbook pages 138 - 143 Student Math Journal pages 1 - 44 Various supplemental materials
Unit 2 (Weeks 5-8)	• Mathematical relationships can be represented as expressions, equations, and inequalities in	1. Operations with Whole Numbers and Decimals	• How can expressions, equations, and inequalities be used to quantify, solve, model, and/or analyze	CC.2.1.6.E.4 Apply and extend previous understandings of numbers to the system of rational numbers.	• To read, write, and interpret numbers written in standard, number-and-word, expanded, and scientific	Provide lesson specific suggestions to help English language learners understand and process the	Expo 1.pdf Expo mixed 2.pdf Gr5_Wk16_Exponential_Notation.pdf unit 2 lesson 8 dividing decimals 2.pdf unit 2 lesson 8 dividing

	mathematical situations.		mathematical situations.		• notations. • To review adding and subtracting decimals. • To develop power-of-ten strategies. • To estimate products and quotients of decimal numbers. • To develop strategies for multiplying and dividing decimals.	mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	decimals.pdf unit 2 lesson 8 divind decimals 3.pdf powers of 10 double digit negative.pdf powers of 10 single digit negative.pdf powers of 10 single digit positive.pdf powers of 10 single digit.pdf Song for Powers of 10 unit2lesson2worksheet1.pdf unit2lesson2worksheet2.pdf unit2lesson2worksheet3.pdf decimal-addition-subtraction-tenths_ADDSU.pdf graph-add-subtract-decimal-tenth-hundredth_GRAPH.pdf in-out boxes add subtract decimals.pdf Assessment Handbook pages 144 - 149 Student Math Journal pages 45 - 81 Various supplemental materials. unit2lesson9worksheet1.pdf unit2lesson9worksheet2.pdf unit2lesson9worksheet3.pdf unit2lesson7worksheet1.pdf unit2lesson7worksheet2.pdf unit2lesson7worksheet3.pdf unit2lesson5-6worksheet1.pdf unit2lesson5-6worksheet2.pdf unit2lesson5-6worksheet3.pdf unit2lesson5-6worksheet4.pdf unit2lesson5-6worksheet5.pdf unit2lesson5-6worksheet6.pdf unit2lesson1worksheet1.pdf unit2lesson1worksheet2.pdf unit2lesson1worksheet3.pdf
Unit 3 (Weeks 9-12)	• Patterns exhibit relationships that can be extended, described, and	1. Variables 2. Formulas 3. Graphs	• How can recognizing repetition or regularity assist in solving	CC.2.2.6.B.1 Apply and extend previous understandings of arithmetic to algebraic	• Use variables to describe number patterns. • Write and		unit 3 lesson 3.1.pdf unit 3 lesson 3.2.pdf unit 3 lesson3.3.pdf unit 3 lesson 2 unit 3 lesson 2.1.pdf unit 3 lesson 2.3

	generalized.		problems more efficiently?	expressions. CC.2.2.6.B.2 Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems.	evaluate algebraic equations. • Use tables, formulas, and graphs for making predictions, drawing conclusions, and analyzing real-world situations. • Estimate products and quotients of decimal numbers. • Develop strategies for multiplying and dividing decimals.		unit 3 lesson 2.pdf unit 3 lesson 1 unit 3 lesson 1.2.pdf unit 3 lesson 1.3.pdf Assessment Handbook pages 150 - 155 Student Math Journal pages 82 - 122. Various supplemental materials.
Unit 4 (Weeks 13-16)	• Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.	1. Rational number uses 2. Rational number operations	• How is mathematics used to quantify, compare, represent, and model numbers?	CC.2.1.6.E.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	• Review the notations for rational numbers - fractions, mixed numbers, decimals, and percentages. • Review the ordering of fractions. • Review operations (addition, subtraction, and multiplication) with fractions and extend the operations to mixed numbers. • Build connections between ow the value of whole- and decimal- number quotients are maintained and	Provide lesson specific suggestions to help English language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games.	Assessment Handbook pages 156 - 160 Student Math Journal pages 123 - 161 Various supplemental materials.

					how a division algorithm for fractions works. • Review the meaning and uses of percentages and solve problems involving percentages and discounts.	Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	
Unit 5 (Weeks 17-20)	• Mathematical relationships can be represented as expressions, equations and inequalities and use them to solve problems.	1. Extended Multiplication Facts, 2. Estimating Sums and Products, 3. Lattice Multiplication 4. Rounding Numbers 5. Powers of 10	• How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? • How are spatial relationships including shape and dimension used to draw, construct, model, and represent real situations or solve problems?	CC.2.3.6.A.1 Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.	• Classify and draw angles	Provide lesson specific suggestions to help English language learners understand and process the mathematical content.G123:G130 Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	Assessment Handbook pages 161 - 165 Student Math Journal pages 162 - 203 Various supplemental materials
Unit 6 (Weeks 21-24)	• Mathematical relations and functions can be	1. Number systems 2. Algebraic	• How can expressions, equations, and	CC.2.2.6.B.1 Apply and extend previous	• Review multiplication of fractions and	Provide lesson specific suggestions to help English	Assessment Handbook pages 166 - 170

		concepts	inequalities be used to quantify, solve, model, and/or analyze mathematical situations?	understandings of arithmetic to algebraic expressions. CC.2.2.6.B.2 Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems.	mixed numbers. • Introduce an algorithm for division of fractions. • Perform basic operations with positive and negative numbers. • Review and model equation-solving techniques.	language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	Student Math Journal pages 205 - 246 Various supplemental materials
modeled through multiple representations and analyzed to raise and answer questions.							
Unit 7 (Weeks 25-28)	• Data can be modeled and used to make inferences.	1. Probability 2. Discrete mathematics	• How can probability and data analysis be used to make predictions?	CC.2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.	• Review basic concepts and vocabulary of probability. • Calculate probabilities and express them as fractions, decimals, and percentages. • Investigate and generate random numbers. • Compare actual results of a simulation to expected	Provide lesson specific suggestions to help English language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson.	Assessment Handbook pages 171 - 175+H137:H141 Student Math Journal pages 247 – 277 Various supplemental materials.

					outcomes.	Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	
					• Use tree diagrams to calculate probabilities. • Use Venn diagrams to analyze situations.		
Unit 8 (Weeks 29-32)	• Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.	1. Rates 2. Ratios	• What makes a tool and/or strategy appropriate for a given task?	CC.2.1.6.D.1 Understand ratio concepts and use ratio reasoning to solve problems.	• Review rates and solve rate problems using rate tables, graphs, unit rates, and open proportions. • Use proportions to model and solve rate problems. • Introduce and use cross multiplication to solve open proportions and percent problems. • Review ratios and solve problems involving part-to-part and part-to-whole ratios. • Find unknown lengths of sides of similar figures.	Provide lesson specific suggestions to help English language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the	Assessment Handbook pages 176 - 181 Student Math Journal pages 278 - 323 Various supplemental materials.

							lesson.
Unit 9 (Weeks 32-36)	• Mathematical relationships can be presented as expressions, equations, and inequalities in mathematical situations.	1. Variables 2. Formulas 3. Graphs	• How can expressions, equations, and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?	Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems. CC.2.2.6.B.3 Represent and analyze quantitative relationships between dependent and independent variables.	• Explore the distributive property. • Apply the order of operations and distributive strategies to simplify algebraic expressions, evaluate formulas, and solve equations. • Apply the Pythagorean Theorem. • Find missing lengths in similar figures using a size-change factor.	Provide lesson specific suggestions to help English language learners understand and process the mathematical content. Provide materials, activities and/or informal questioning to assess prior knowledge and preview content which prepares students to engage in the lesson. Provide additional opportunities to apply the mathematical content of the lessons including math stations, projects, and math games. Provide projects and materials that allow students to apply or further explore the mathematical content of the lesson.	Assessment Handbook pages 182 - 187 Student Math Journal pages 324 - 369 Various supplemental materials.
Unit 10 (Weeks 37-40)	• Patterns exhibit relationships that can be extended, described, and generalized.	1. Geometry topics	• How can geometric properties and theorems be used to describe, model, and analyze situations?	CC.2.3.6.A.1 Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.	• Review regular tessellations and explore semiregular tessellations. • Explore point and rotation symmetry. • Introduce topology and perform topological transformations. • Experiment with	Provide lesson specific suggestions to help English language learners understand and process the mathematical content.G169:G175 Provide materials, activities and/or informal questioning to assess prior knowledge and	Assessment Handbook pages 188 - 192 Student Math Journal pages 370 - 386 Various supplemental materials

					Mobius strips.	preview content which prepares students to engage in the lesson.	