Swedesboro-Woolwich School District's Mathematics Curriculum Guidance Document

GRADE 6– Unit 2

Mission Statement
The primary goal of the Swedesboro-Woolwich School District is to prepare each student with the real life skills needed to compete in a highly competitive global economy. This will be achieved by providing a comprehensive curriculum, the integration of technology, and the professional services of a competent and dedicated faculty, administration, and support staff. Guiding this mission will be Federal mandates, including No Child Left Behind, the New Jersey Core Curriculum Content Standards, and local initiatives addressing the individual needs of our students as determined by the Board of Education. The diverse resources of the school district, which includes a caring PTO and active adult community, contribute to a quality school system. They serve an integral role in supporting positive learning experiences that motivate, challenge and inspire children to learn.

Unit/Module Overview

Unit Two includes equations and inequalities encompassing sixty-three days. The main focus is evaluating ratios and proportional relationships, understanding the number system, and evaluating expressions and equations. Mathematical Practices from the box below will be connected to the daily lessons.

UNIT 2	Content Focus	Math Practices	Vocabulary

28 days	Ratios with Tables, Comparing, and Graphing, Rates, Percents, and Converting Measurements	1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with Mathematics 5. Use appropriate tools strategically 6. Attend to precision 7. Look for and make use of structure 8. Look for and express regularity in repeated reasoning	● Conversion Factor ● Equivalent Rates ● Equivalent Ratios ● Metric Systems ● Percent ● Rate ● Ratio ● Unit Analysis ● Unit Rate ● US Customary System

17 days	Understanding Algebraic Expressions with Properties	1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with Mathematics 5. Use appropriate tools strategically 6. Attend to precision 7. Look for and make use of structure 8. Look for and express regularity in repeated reasoning	

18 days	Writing and Solving Equations with all Operations in One and Two Variables, Writing, Graphing, and Solving Inequalities with all Operations	1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with Mathematics 5. Use appropriate tools strategically 6. Attend to precision 7. Look for and make use of structure 8. Look for and express regularity in repeated reasoning	• Addition Property of Equality • Addition Property of Inequality • Dependent Variable • Division Property of Equality • Division Property of Inequality • Equation • Equation in Two Variables • Graph of an Inequality • Independent Variable • Inequality • Inverse Operations • Multiplication Property of Equality • Multiplication Property of Inequality • Multiplication Inverse Property • Solution • Subtraction Property of Equality • Subtraction Property of Inequality

Standards Covered in Current Unit/Module	
Standards	
MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

MA.6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

MA.6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

MA.6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

MA.6.NS.C.7 Understand ordering and absolute value of rational numbers.

MA.6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

MA.6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

MA.6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

MA.6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

MA.6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Content Focus	**NJSLS Priority Standards**	**Learning Goals**	**Learning Targets**
Understand ratios, ratio tables, rates, and unit	MA.6.6.RP.1 MA.6.6.RP.2	Solve real world and mathematical problems using	I can perform basic processes, such as · use ratio language to describe a ratio

rates. Understand fraction and percent comparisons.	MA.6.6.RP.3	ratios and unit rates (6.RP.3)	relationship between two quantities (6.RP.1) · Use rate language in the context of a ratio relationpship (6.RP.2) · Recognize multiple equivalent representations of ratios
Apply and extend previous understandings of arithmetic to algebraic expressions	6.EE.1 6.EE.2 6.EE.3 6.EE.4	Evaluate expression at specific values of their variables including whole-number exponents (6.EE.1; 6.EE.2c) Generate equivalent expressions using the properties of operations (6.EE.3)	I can perform basic process, such as
Apply and extend previous understandings of arithmetic to algebraic expressions to solve equations and inequalities	MA.6.6.EE.5 MA.6.6.EE.7 MA.6.6.EE.8 MA.6.6.EE.9	Solve real world and mathematical equations of the form x + p = q when all variables are nonnegative, rational numbers (6.EE.7) Write an inequality of the form x > c or x < c to represent a constraint of condition of a real-world or mathematical problem (6.EE.8) Analyze the relationship between the independent and dependent variables using graphs, tables, and equations (6.EE.9)	I can perform basic processes, such as · Use substitution to determine whether a given number makes an equation or inequality (6.EE.5) · Use variables to represent numbers and write expressions (6.EE.6) · Represent solutions of inequalities on number line diagrams (6.EE.8) · Write an equation to express one quantity (dependent variable) in terms of the other quantity (independent variable (6.EE.9)

Weekly Learning Activities and Pacing Guide						
Unit 2	**Topic**	**Activity**	**Learning Goals**	**Learning Targets**	**Resources**	**Assessments**

Weeks 12-16	Ratios with Tables, Comparing, and Graphing, Rates, Percents, and Converting Measurements	**Whole Group**: Ch. 5 /Lessons 1-7 (from Big Ideas Teachers Manual) Chapter Opener, Start Thinking! Warm-Up Introduce Vocabulary Words. Laurie's notes. Activity Journal with partners. Teachers can decide which pages will be done in groups and which pages will be done during independent work.) **Small Group**: Journal activities. Lesson problems from text or on-line digital book. Lesson tutorials from dynamic classroom. Differentiated lessons from dynamic classroom. Skills review handbook. **Independent Work:**	SWBAT understand the concept of a ratio SWBAT use ratios to describe the relationship between two quantities SWBAT use ratio tables to find equivalent ratios SWBAT solve real-life problems SWBAT understand the concepts of rates and unit rates SWBAT write unit rates SWBAT compare ratios SWBAT compare unit rates SWBAT graph ordered pairs to compare ratios and rates SWBAT write percents as fractions SWBAT write fractions as percents SWBAT find percents of numbers SWBAT find the whole given the part and the	I can: ● write ratio notation. ● explain how order matters when writing a ratio. ● demonstrate how ratios can be simplified. ● demonstrate how ratios compare two quantities: the quantities do not have to be the same unit of measure. ● recognize that ratios appear in a variety of different contexts: part-to-whole, part-to-part, and rates. ● generalize that all ratios relate two quantities or measures within a given situation in a multiplication relationship. ● analyze context to determine which kind of ratio is represented. ● identify and calculate a unit rate. ● use appropriate math terminology as related to rate. ● analyze the relationship between a ratio a:b and a unit rate a/b where b is not equal to 0. ● make a table of equivalent ratios using whole numbers. ● find the missing values in a table of equivalent ratios.	Big Ideas NJ DOE Model Curriculum National Library of Virtual Manipulatives Accelerated Math Corestandards.org NJCTL Chromebooks	After Lesson 4.4 – Quiz After Lesson 4.7 -Quiz After Chapter is completed - Chapter 4 Test

		Resources by the Chapter – Practice A and B Puzzle Time Student Text problems Enrichment and Extension Technology Connection	percent SWBAT use conversion factors	• solve real-world problems involving rate and ratio.		
Weeks 16-18	Understanding Algebraic Expressions with Properties	**Whole Group**: Ch. 5 /Lessons 1-6 (from Big Ideas Teachers Manual) Chapter Opener, Start Thinking! Warm-Up Introduce Vocabulary Words. Laurie's notes. Activity Journal with partners. Teachers can decide which pages will be done in groups and which pages will be done during independent work.) **Small Group**: Journal activities. Lesson problems from text or on-line digital book.	SWBAT use the Distributive Property to multiply a fraction and a mixed number. This is generalized to multiply mixed numbers • SWBAT understand simple word problems, and then write and evaluate a mathematical expression that corresponds to the given situations • SWBAT explain how to evaluate an algebraic expression containing a variable • SWBAT write algebraic expressions to represent phrases that include words corresponding to the operations of addition, subtraction, multiplication,	I can: •use numbers and variables to evaluate expressions. • translate written phrases into algebraic expressions. •translate algebraic expressions into written phrases. • create equivalent expressions using the properties of operations. •apply properties of operations to create equivalent expressions. • recognize when two expressions are equivalent. • prove that two expressions are equivalent no matter what number is substituted. • recognize that a variable can represent an unknown number, or,	Big Ideas Chapter 5 National Library of Virtual Manipulatives Accelerated Math Corestandards.org NJCTL Chromebooks	After Lesson 5.2 – Quiz After Lesson 5.4 -Quiz After Chapter is completed - Chapter 5 Test

		Lesson tutorials from dynamic classroom. Differentiated lessons from dynamic classroom. Skills review handbook. **Independent Work**: Resources by the Chapter – Practice A and B Puzzle Time Student Text problems Enrichment and Extension Technology Connection	and division • SWBAT write an algebraic expression that represents a verbal phrase • SWBAT gain an understanding of what is meant by order and grouping as they apply to number operations • SWBAT use the Commutative and Associative Properties, and two other properties, to show that expressions are equivalent • SWBAT gain an understanding of how the Distributive Property can be used to perform multiplication problems using mental math • SWBAT use the Distributive Property to show that two expressions are equivalent	depending on the scenario/situation, any number in a specific set. •relate variables to a context. • write expressions when solving a real-world or mathematical problem.		
Weeks 19-21	Writing and Solving Equations with all Operations in One and Two Variables,	**Whole Group**: Ch.7 /Lessons 1-7 (from Big Ideas Teachers Manual)	• SWBAT write word sentences as equations SWBAT use addition or subtraction to solve	I can: ● recognize solving an equation or inequality as a process of answering which values from a specific set, if	Big Ideas NJ DOE Model Curriculum National Library of Virtual	After Lesson 64 – Quiz After Lesson 6.7 -Quiz

	Writing, Graphing, and Solving Inequalities with all Operations	Chapter Opener, Start Thinking! Warm-Up Introduce Vocabulary Words. Laurie's notes. Activity Journal with partners. Teachers can decide which pages will be done in groups and which pages will be done during independent work.) **Small Group:** Journal activities. Lesson problems from text or on-line digital book. Lesson tutorials from dynamic classroom. Differentiated lessons from dynamic classroom. Skills review handbook. **Independent Work:** Resources by the Chapter – Practice A and B Puzzle Time	equations SWBAT use multiplication or division to solve equations SWBAT identify independent and dependent variables SWBAT write equations in two variables SWBAT use tables and graphs to analyze the relationship SWBAT write word sentences as inequalities SWBAT use all operations to solve inequalities	any, make the equation or inequality true. ● use the solution to an equation or inequality to prove that the answer is correct. ● use substitution to determine whether a given number in a specified set makes an equation or inequality true. ● define an inverse operation. ● use inverse operations to solve one step variable equations. ● develop a rule for solving one step equations. ● solve and write equations for real orld situations. ● write an inequality to represetn a condition. ● represetn solutions to inequalitites on a number line. ● define independent and dependent variables. ● use variables to represent two quantities in a real world problem. ● analyze the relationship between the dependent variable and independent variable using tables and graphs.	Manipulatives Accelerated Math Corestandards.org NJCTL Chromebooks	After Chapter is completed - Chapter 6 Test S/W Grade 6 Math Benchmark Unit 2

		Student Text problems Enrichment and Extension Technology Connection				

Materials and Resources	Possible Assessments
• Big Ideas - Big Ideas Learning LLC. 2014 www.bigideasmath.com • NJ DOE Model Curriculum www.state.nj.us/education/modelcurriculum • National Library of Virtual Manipulatives http://nlvm.usu.edu/en/nav/vlibrary.html • www.corestandards.org • http://www.njctl.org/courses/math/ • Chromebooks • White Boards • Brightlinks Projector • Soundfield System • Document Camera	• Big Ideas Quiz 5.1-5.4 • Big Ideas Quiz 5.5-5.7 • Big Ideas Chapter 5 Assessment with Standards • Big Ideas Quiz 6.1-6.3 • Big Ideas Quiz 6.4-6.5 • Big Ideas Chapter 6 Assessment with Standards • Big Ideas Quiz 7.1-7.4 • Big Ideas Quiz 7.5-7.7 • Big Ideas Chapter 7 Assessment with Standards • S/W Grade 6 Math Benchmark Unit 2 • Journal Writing • Exit Tickets • Response Boards • IXL, or other technology programs • http://www.njctl.org/2012/10/nj-model-curriculum-assessments-available-on-line/

Technology Integration	Interdisciplinary Connections	21st Century Life and Career Skills
• • 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools . • • Use digital camera or webcam to record	• Reading and comprehension - involved for all word problems. • Science: calculation of unit rates, rate of speed, etc. • Science- conversions	• • CRP3. Attend to personal health and financial well-being. • • CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

problem explanations. . • Foster skill practice using specific apps . ● TECH.8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools. ● TECH.8.1.8.A.2 Create a document (e.g., newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability. ● TECH.8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory. ● TECH.8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results. ● TECH.8.1.8.A.5 Create a database query, sort and create a report and describe the process, and explain the report results.		

Link to Additional Components including Cross Curricular Connections, Accommodations, Assessments, Etc

ELA Enduring Understanding Statements