Swedesboro-Woolwich School District's Advanced Math Curriculum Guidance Document

GRADE 6– Advanced Math Trimester 3 (Units 5 and 6)

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
In addition to the current Grade 6 Curriculum, the Advanced Math Curriculum will include additional units from the Grade 7 Math Curriculum from Kingsway. **Unit 5:** In Grade 7, students extend their reasoning about ratios and proportional relationships in several ways. Students use ratios in cases that involve pairs of rational number entries, and they compute associated unit rates. They identify these unit rates in representations of proportional relationships. They work with equations in two variables to represent and analyze proportional relationships. Students examine situations carefully, to determine if they describe a proportional relationship. Students must understand the structure of the problem, which includes looking for and understanding the roles of "for every," "for each," and "per." Students recognize that graphs that are not lines through the origin and tables in which there is not a constant ratio in the entries do not represent proportional relationships. As students work with proportional relationships, they write equations of the form y = cx, where c is a constant of proportionality, i.e., a unit rate. They see this unit rate as the amount of increase in y as x increases by 1 unit in a ratio table and they recognize the unit rate as the vertical increase in a "unit rate triangle" or "slope triangle" with horizontal side of length 1 for a graph of a proportional relationship. Students connect their work with equations to their work with tables and diagrams. Ultimately, students apply concepts of ratio and unit rate learned in grade 6 to fluently compute unit rates, represent proportional relationships between quantities, and compare and contrast proportional relationships in real world contexts. Students will apply their understanding of ratios and proportionality to situations involving multi-step ratio problems as well as scale drawings. **Unit 6:**

In this unit students will use proportional relationships to solve multi-step ratio and percent problems. Examples include: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, and percent error. Students will apply mathematical concepts to real world situations throughout the unit. Students will also gain fluency with modeling percents (percent means out of 100), writing percents using equal ratios. Students will also build connections between percents and decimals and percents and fractions. The use mental math and estimation with percents will increase fluency when calculating percent, part and wholes using proportions. Students will also write and solve percent equations to find tax and tip, commission, percent of increase and decrease.

Standards Covered in Current Unit/Module
Related Standards and Learning Goals

Unit Title	Duration	Related Standards	Learning Goals	Topics and Skills
Unit 5: Ratios, Proportions	4 weeks February	7.RP.1 7.RP.2a 7.RP.2b 7.RP.2c 7.RP.2d 7.RP.3 7.G.1 Interdisciplinary: ELA: LA.6-8.CCSS.ELA□Literacy.CCRA.R.1, LA.6-8.CCSS.ELA-Literacy.CCRA.W.1 Technology: TEC.5-8.8.1.8.A, TEC.5-8.8.1.8.E	1. Students will be able to apply concepts of ratios and proportions to compute unit rate and solve proportions in mathematical and real□world problems, including scale drawings. 2. Students will be able to graph and interpret the unit rate and constant of proportional relationships and compare and contrast proportional relationships in real world contexts.	• Proportional relationships • Equivalent ratios ● In a table ● Straight line through the origin when graphing on a coordinate plane ● Equation • Constant of proportionality (unit rate) ● Tables ● Graphs ● Equations ● Diagrams ● Verbal descriptions • Point (x,y) in terms of situation ● (0, 0) ● (1, r) where r is the unit rate • Multi-step ratio problems • WRITE ratios for various situations • RECOGNIZE proportional relationships • REPRESENT proportional relationships in table, graph, or equation • DETERMINE if there is a proportional relationship in a table or

				graph • IDENTIFY the constant of proportionality in a table, graph, or equation • TEST if ratios are equivalent • EXPLAIN point (x,y) • Scale drawings ● Scale ● Actual lengths and areas • SOLVE multi-step problems involving scale drawings of geometric figures • COMPUTE unit rates • COMPUTE actual lengths/areas from scale drawings • REPRODUCE a scale drawing at a different scale
Unit 6: Percent	5 weeks March	Mathematics: 7.RP.3 7.EE.3 Interdisciplinary: ELA: LA.6-8.CCSS.ELA□Literacy.CCRA.R.1, LA.6-8.CCSS.ELA-Literacy.CCRA.W.1 Technology: TEC.5-8.8.1.8.A, TEC.5-8.8.1.8.E	1. Students will be able to use proportionality to solve percent problems, for example: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. 2. Students will be able to convert between fractions, decimals and percent to rewrite expressions and explain how the quantities are related and then assess the reasonableness of answers using mental math and estimation	• SOLVE multi-step ratio and percent problems including simple interest, tax, mark-ups and markdowns, gratuities, and commissions, fees, percent increase and decrease, percent error. • WRITE an expression in different forms • UNDERSTAND how rewriting an expression in different forms can show how the quantities in a problem are related • CONVERT between fractions, decimals, and percents • USE the percent proportion to solve real world problems. • APPLY the distributive property to solve percent problems

			strategies.	

Essential Questions	Enduring Understanding
Unit 5: 1. How do rates, ratios, percentages and proportional relationships apply to our world? 2. When and why do I use proportional comparisons? 3. How does comparing quantities describe the relationship between them? 4. How do graphs illustrate proportional relationships? **Unit 6:** 1. What is the relationship between fractions, decimals, and percents? 2. How does the ongoing use of fractions and decimals apply to real-life situations? 3. How do percentages apply to our world? 4. How can you use models to estimate percent questions? 5. How can you use a proportion or equation to solve each type of percent problem?	**Unit 5:** 1. Rates, ratios, and proportional relationships express how quantities change in relationship to each other. 2. Rates, ratios, and proportional relationships can be represented in multiple ways. 3. Rates, ratios, and proportional relationships can be applied to problem solving situations. **Unit 6:** 1. Percents can be compared with decimals and fractions. 2. Percent problems can be solved using proportions and equations. 3. Percentages can be utilized to solve real-world problems. 4. Solving percent problems sometimes involves percents of increase and decrease, and simple interest.

Unit/Module Weekly Learning Activities and Pacing Guide			
Unit	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**
Unit 5	7.RP.1 Compute unit rates associates with rations of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction ½ ¼ miles per hour, equivalently	**Learning Goals:** • Students will be able to apply concepts of ratios and proportions to compute unit rate and solve proportions in mathematical and real-world problems, including scale drawings. • Students will be able to graph and interpret the unit	● Texts ○ Big Ideas Grade 7 Text ○ Engage NY ○ Department of Ed. Georgia ● Materials ○ Buses Task

	2 miles per hour. 7.RP.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate. 7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	rate and constant of proportional relationships and compare and contrast proportional relationships in real world contexts. **Obj. We are learning to**: ● Communicate precisely using appropriate mathematical language. The terms students learn to use with increasing precision within this unit are: ratio, rate, unit rate, complex fraction, proportional, proportion, Cross Product Property, rate of change, constant of proportionality, direct variation, greatest common factor, equivalent fractions, equation, inverse operations, properties of equality, origin, steepness, scale, scale drawing, scale factor. ● Find ratios, rates & unit rates. ● Find ratios and rates involving ratios of fractions. ● Use equivalent ratios to determine whether two ratios form a proportion. ● Apply the Cross Products property to determine whether two ratios form a proportion. ● Analyze graphs to determine whether two ratios form a proportion. ● Interpret graphs if proportional relationships. ● Write proportions. ● Solve proportions using mental math. ● Solve proportions using multiplication or Cross Products Property. ● Use scale drawings to find actual distances. ● Calculate scale factors. ● Investigate scale drawings to find actual perimeters and areas. ● Construct scale drawings. ● Write the equation of proportional relationship ● Find the constant of proportionality of lines.	○ Sale! Task ○ T-Shirt Sale Task ○ A Golden Crown? Task ○ Ice Cream Task ○ Photographs (A) ○ Designing a Garden (Drawing to Scale) ○ Real-Life Situations ○ Modeling: A Race ○ Sense of Scale ○ Scale Drawings Worksheet

		• Interpret the constant of proportionality of lines as unit rate. • Identify direct variation from graphs or equations. • Assess direct variation models to solve problems. **Suggested Formative Assessment(s)**: • Teacher Observation • Class Participation • Warm Ups • Homework • Exit Slips • Status Checks • Student Progress Charts & Reflections • Quizzes/Constructive Quizzes • My Favorite No • Classroom Shuffle • Math "Debates" • Sorting Tasks • Class Survey & Defend Your Answer • Comments Only Marking • Integer Cards • Integer Games • Fluency Activities **Summative Assessments:** • Unit Tests • Extended Constructed Responses Questions • Projects • Summative Assessments	
Unit 6	7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to	**Learning Goals:** Students will be able to convert between fractions, decimals and percent to rewrite expressions and explain how the quantities are related and then assess the reasonableness of answers using mental math and	• Texts ○ Big Ideas Grade 7 Text ○ Engage NY ○ Department of Ed. Georgia • Materials

	calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	estimation strategies. Students will be able to use proportionality to solve percent problems, for example: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. **Obj. We are learning to**: ● Communicate precisely using appropriate mathematical language. The terms students learn to use with increasing precision within this unit are: percent, numerator, denominator, equivalent fractions, proportion, part, whole, percent proportion, percent of change, percent of increase, percent of decrease, discount, markup, interest, simple interest, principal. ● Write percents as decimals ● Write decimals as percents. ● Solve real-life problems. ● Compare and order fractions, decimals, and percent ● Apply the percent proportion to find parts, wholes and percents. ● Apply the percent equation to find parts, wholes and percents. ● Calculate percents of increase and decrease. ● Assess percent of discounts to find prices of items. ● Compare percent of markups to find selling prices of items. ● Apply the simple interest formula to find interest earned or paid, annual interest rates and amounts paid on loans. **Suggested Formative Assessment(s)**: ● Teacher Observation	Online Practice - Inequalities ○ Sumdog.com ○ ArcademicSkillBuilders.com Online Interactives ○ Increasing & Decreasing Quantities by Percent ○ 25% Sale Task ○ Gas Stations Task (from Big Ideas online) ○ Decimals and Percents -Game ○ Fraction, Decimal, % Conversion - Game ○ Percent of a Number -Game ○ Simple Interest -Game ○ Sales Tax -Game ○ Tax, Tip, Discount -Jeopardy Video Resources ● Learn Zillion -Tax ● Learn Zillion -Tips ● Learn Zillion - Amount of Change

		• Class Participation • Warm Ups • Homework • Exit Slips • Status Checks • Student Progress Charts & Reflections • Quizzes/Constructive Quizzes • My Favorite No • Classroom Shuffle • Math "Debates" • Sorting Tasks • Class Survey & Defend Your Answer • Comments Only Marking • Integer Cards • Integer Games • Fluency Activities **Summative Assessments:** • Unit Tests • Extended Constructed Responses Questions • Projects • Summative Assessments	

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

ELA Enduring Understanding Statements