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

GRADE 6– Advanced Math Trimester 1 (Units 1 and 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
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 1:** In this unit, students will apply and extend understandings of integers to add, subtract, multiply and divide in both mathematical problems and real-world situations. Students communicate and engage in discussions about their reasoning using appropriate mathematical language, including but not limited to these terms: absolute value, integers and additive inverse. Students employ the use of both a horizontal and vertical number line to represent addition and subtraction of integers. Student understand that integers can be multiplied and develop rules and strategies to apply the properties of operation (specifically the distributive property); in addition, student apply rules to divide integer and recognize that the divisor cannot be zero. Students will use their understanding of rational numbers and apply them to linear functions. **Unit 2:** In this unit, students apply and extend previous understandings of integers to add, subtract, multiply and divide rational numbers. Students will interpret sums of rational numbers by describing real-world contexts and show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. Students will also develop a conceptual understanding that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. This unit will allow students to interpret products and quotients of rational numbers by describing real-world contexts. Students will gain a conceptual understanding of rational numbers, for example every quotient of integers (with non-zero

divisor) is a rational number. Students will convert a rational number to a decimal using long division and know that the decimal form of a rational number terminates in 0's or eventually repeats. Solving real-world and mathematical problems involving the four operations with rational numbers will be an essential skill in this unit. In this unit, students will represent their calculations using number line models, equations or expressions, and real world applications. Students will use their understanding of rational numbers and apply them to linear functions in subsequent units.

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

Unit Title	Duration	Related Standards	Learning Goals	Topics and Skills
Unit 1: Operations With Integers	3 weeks September	Mathematics: 7.NS.1a 7.NS.1b 7.NS.1c 7.NS.1d 7.NS.2a 7.NS.2b 7.NS.2c 7.NS.3 Interdisciplinary: ELA: LA.6-8.CCSS.ELA-Literacy.CCRA.R.1, LA.6-8.CCSS.ELA-Literacy.CCRA.W.1 Technology: (Teacher) TEC.5-8.8.1.8.A, TEC.5-8.8.1.8.E	1. Solve real-world problems and mathematical problems involving addition, subtraction, multiplication and division of integers with and without a number line.	• RECOGNIZE the additive inverse property • DESCRIBE opposite quantities • DETERMINE absolute value • UNDERSTAND positive or negative direction on the number line • REPRESENT addition and subtraction with integers on a horizontal or vertical number line. • DESCRIBE and MODEL on the number line real world situations in which integers are combined • SHOW additive inverses • INTERPRET sums in context • CONVERT subtraction statements to equivalent addition statements using additive inverse property • DEVELOP rules for adding integers using absolute value short-cut • DEVELOP the argument that the distance between two points is the absolute value of the distance between their coordinates • ADD and SUBTRACT integers by using the concept of absolute value • APPLY absolute value principle in context • APPLY properties of operations as strategies to add and subtract integers • MULTIPLY and DIVIDE integers

				• UNDERSTAND/DEVELOP rules for multiplying signed numbers • UNDERSTAND every quotient of integers with non-zero divisor is a rational number • EXPLAIN why a divisor cannot be zero • INTERPRET products & quotients in context • APPLY properties of operations as strategies to multiply and divide integers • SOLVE real world problems in context ● APPLY properties of operations to calculate ● ASSESS reasonableness of answers ● USE mental computation and estimation strategies
Unit 2: Operations With Rational Numbers	4 weeks October	Mathematics: 7.NS.1a 7.NS.1b 7.NS.1c 7.NS.1d 7.NS.2a 7.NS.2b 7.NS.2c 7.NS.2d 7.NS.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. Solve real-world problems and mathematical problems involving addition, subtraction, multiplication and division of integers with and without a number line.	• REVIEW adding and subtracting decimals. • REVIEW adding and subtracting fractions and mixed numbers. • REVIEW multiplying fractions and mixed numbers. • REVIEW dividing fractions and mixed numbers • REVIEW multiplying and dividing decimals. • IDENTIFY rational numbers • REPRESENT addition and subtraction with rational numbers on a horizontal or vertical number line. • DESCRIBE and MODEL on the number line real world situations in which rational numbers are combined • INTERPRET sums in context • UNDERSTAND rules for adding rational numbers using absolute value short-cut • DEVELOP the argument that the distance between two points is the absolute value of the distance between their coordinates • ADD and SUBTRACT rational numbers by using the concept of absolute value • APPLY absolute value principle in context • APPLY properties of operations as strategies to add and subtract rational numbers • MULTIPLY and DIVIDE rational numbers • UNDERSTAND rules for multiplying signed numbers • CONVERT rational numbers to terminating or repeating

				decimals • INTERPRET products & quotients in context • APPLY properties of operations as strategies to multiply and divide rational numbers • SOLVE real world problems in context ● APPLY properties of operations to calculate ● CONVERT between equivalent forms of rational numbers ● ASSESS reasonableness of answers ● USE mental computation and estimation strategies

Essential Questions	Enduring Understanding
Unit 1: 1. How can you use integers to represent the real-world situations, such as finance, temperature and speed? 2. What is the relationship between properties of operations and types of numbers? 3. What models can be used to show addition and subtraction of positive and negative integers? 4. What strategies are most useful in helping me develop algorithms for adding, subtracting, multiplying, and dividing positive and negative integers? **Unit 2:** 1. How are rational numbers used and applied in real-life and mathematical situations? 2. How can use a number line to order rational numbers? 3. What strategies are most useful in helping me develop algorithms for adding, subtracting, multiplying, and dividing positive and negative rational numbers? 4. How do I use a number line to model addition or subtraction of rational numbers?	**Unit:** 1. Positive and negative numbers are often used to solve problems in everyday life. 2. Computation with positive and negative numbers is often necessary to determine relationships between quantities. 3. Models, diagrams, manipulatives and patterns are useful in developing and remembering algorithms for computing with positive and negative numbers. 4. Properties of real numbers hold for all integers. **Unit 2:** 1. Students will be able to add, subtract, multiply, and divide rational numbers fluently as well as solve real-world and mathematical problems. 2. Rational numbers use the same properties as whole numbers. 3. Rational numbers are points on the number line. 4. Rational numbers can be used to represent and solve real-life situation problems. 5. Rational numbers can be represented with visuals (including distance models), language, and real-life contexts. 6. A number line model can be used to represent the unique placement of

	any number in relation to other numbers. 7. There are precise terms and sequence to describe operations with rational numbers.

Unit/Module Weekly Learning Activities and Pacing Guide			
Unit	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**
Unit 1	7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. 7. NS.1a Describe situations in which opposite quantities combine to make 0. 7.NS.1b Understand p + q as the number located a distance | q | from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. 7. NS.1c Understand subtraction of rational numbers as adding the additive inverse, p − q = p + (−q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	**Learning Goals:** Solve real-world problems and mathematical problems involving addition, subtraction, multiplication and division of integers with and without a number line. **Obj. We are learning to**: ● Communicate precisely using appropriate mathematical language. The terms students learn to use with increasing precision within this unit are: integer, absolute value, opposites, additive inverse, sum, difference, product, and quotient. ● Define the additive inverse property. ● Describe opposite quantities. ● Define and find absolute values of numbers. ● Understand positive and negative direction on a number line. ● Add integers. ● Subtract integers. ● Divide integers. ● Multiply integers. ● Represent addition and subtraction	● Texts ○ Big Ideas Grade 7 Text ○ Engage NY ○ Department of Ed. Georgia ● Materials ○ Using Positive & Negative Numbers in Context Task - https://www.map.mathshell.org/lessons.php?collection=8&unit=7105 ○ Rational Numbers in Football - https://whyy.pbslearningmedia.org/resource/mket-math-ns-ratnumb/football/

	7. NS.1d Apply properties of operations as strategies to add and subtract rational numbers. 7. NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 7.NS.2.a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers, interpret products of rational numbers by describing real-world contexts. 7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real world contexts. 7.NS.A.2c Apply properties of operations as strategies to multiply and divide rational numbers. 7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers	with integers on a number line. ● Apply properties of operations as strategies to add, subtract, multiply and divide integers (Commutative, Associative, and Distributive Properties). ● Solve real world problems using integers. **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 2			
Unit 3			

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

ELA Enduring Understanding Statements