GRADE 5 Advanced Math – 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
Students will develop conceptual understanding and with accuracy and efficiency solve addition and subtraction of fractions and mixed numbers. Students will also develop an understanding of the multiplication and division of fractions. This unit will be completed in 9 weeks.

Standards Covered in Current Unit/Module		
CCS Priority Standard	**Learning Goals**	**Learning Targets**
• **MA.5.5.NF.A** Use equivalent fractions as a strategy to add and subtract fractions.	• **SWBAT** use equivalent fractions as a strategy to add and subtract fractions.	• I can use models to add and subtract fractions with unlike denominators. • I can estimate sums and differences. • I can rewrite a pair of fractions so that they have a common denominator.

• **MA.5.5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	• **SWBAT** add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of freactions with like denominators.	• I can find a common denominator to add and subtract fractions with unlike denominators. • I can use equivalent fractions to add and subtract fractions with unlike denominators. • I can apply the properties of addition when adding fractions with unlike denominators.
• **MA.5.5.NF.A.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, eg., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	• **SWBAT** solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, and use number sense of fractions to estimate mentally and check for reasonableness of answers.	• I can find equivalent fractions to add and subtraction fractions in word problems.
• **MA.5.5.NF.B.3** Interpret a fraction as division of the numerator by the denominator (a/b = a divided by b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, eg., by using visual fraction models or equations to represent the problem.	• **SWBAT** interpret a fractionas division of the numerator by the denominator, and solve word problems involving division of whole numbers leading to answers int he form of fractions or mixed numbers.	• I can relate fractions to a division problem.
• **MA.5.5.NF.B.4** Apply and extend previous understandings of multiplication to multiply a fraction or a whole number by a fraction.	• **SWBAT** apply and extend previous understandings of multiplication to multiply a fraction or a whole number by a fraction.	• I can find the product of a fraction and a whole number. • I can write the product in simplest form.
• **MA.5.5.NF.4a** Interpret the product (a/b) x q as parts of a partition of q into b equal parts; equivalently, as a result of a sequence of operations a x q /b.	• **SWBAT** interpret the product (a/b) x q as parts of a partition of q into b equal parts.	• I can find a fractional part of a group. • I can use a model to show the product of a fraction and a whole number.

		• I can find the product of a fraction and a whole number. • I can find the product of two fractions.
• **MA.5.5.NF.4b** Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	• **SWBAT** find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths.	• I can use an area model to show the product of two fractions. • I can use a unit tile to find the area of a rectangle with fractional side lengths.
• **MA.5.5.NF.5** Interpret multiplication as scaling.	• **SWBAT** interpret multiplication as scaling.	•
• **MA.5.5.NF.5a** Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	• **SWBAT** compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	• I can use a diagram to show the product of two fractions or a fraction and a whole number.
• **MA.5.5.NF.5b** Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familar case); explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n x a)/(n x b) to the effect of multiplying a/b by 1.	• **SWBAT** explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number, and why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.	• I can explain the product when one factor is less than, equal to, or greater than 1. • I can apply the strategies *guess, check, and revise* when solving word problems with fractions.

• **MA.5.5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers, eg., by using visual fraction models or equations to represent the problem.	• **SWBAT** solve real world problems involving multiplicationof fractions and mixed numbers by using visual fraction models or equations to represent the problem.	• I can write a whole number as a fraction. • I can write a mixed number as a fraction. • I can multiply a whole number by a mixed number. • I can use the distributive property to multiply a whole number by a mixed number. • I can write a product in simplest form.
• **MA.5.5.NF.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	• **SWBAT** apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	• I can divide a fraction by a whole number. • I can divide a whole number by a fraction. • I can divide a fraction by a fraction. •
• **MA.5.5.NF.7a** Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.	• **SWBAT** interpret division of a unit fraction by a non-zero whole number, and compute such quotients.	• I can divide a whole number by a fraction or a fraction by a whole number with fraction strips. •
• **MA.5.5.NF.7b** Interpret division of a whole number by a unit fraction, and compute such quotients.	• **SWBAT** interpret divisionof a whol number by a unit fraction, and compute such quotients.	• I can apply multiplication when solving division problems with fractions.
• **MA.5.5.NF.7c** Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, eg., by using visual fraction models and equations to represent the problem.	• **SWBAT** solve real world problems involving divisionof unit fractions by non-zero whole numbers and division of whole numbers by unit fractions using visual fracton models and equations to represent the problem.	• I can divide fractions by solving a relate multiplication sentence. • I can use diagrams, equations, and story problems to represent division.
• **MA.6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	• **SWBAT** interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.	• I can interpret and compute quotients of fractions. • I can solve word problems involving division of fractions by a fraction.

• **MATH.6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.	• **SWBAT** accurately and efficiently ,divide multi-digit numbers using the standard algorithm.	• I can accurately and efficiently ,divide multi-digit numbers using the standard algorithm.
• **MATH.6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	• **SWBAT** accurately and efficiently ,add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	• I can accurately and efficiently ,add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
• **MATH.6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	• **SWBAT** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	• I can Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

Essential Questions

- How can you use models to add fractions that have different denominators?
- How can you use models to subtract fractions that have different denominators?
- How can you make reasonable estimates of fraction sums and differences?
- How can you rewrite a pair of fractions so that they have a common denominator?
- How can you use a common denominator to add and subtract fractions with unlike denominators?
- How can you add and subtract mixed numbers wit unlike denominators?
- How can you use renaming to find the difference of two mixed numbers?
- How can you use addition or subtraction to describe a pattern or create a sequence with fractions?
- How can the strategy work backward help solve a problem with fraciond that involves addition and subtraction?
- How can properties help you add fraction with unlike denominators?
- How can you find a fractional part of a group?
- How can you use a model to show the product of a fraction and a whole number?
- How can you find the product of a fraction and a whole number without using a model?
- How can you use an area model to show the product of two fractions?
- How does the size of the product compare to the size of one factor when multiplying fractions?
- How do you multiply fractions?

- How can you use a unit tile to find the area of a rectangle with fractional side lengths?
- How does the size of the product compare to the size of one factor when multiplying fractions greater than one?
- How do you multiply mixed numbers?
- How can you use the strategy guess, check, and revise to solve problems with fractions?
- How do you calculate unit rate?
- How do you divide mixed numbers?
- How do you divide a whole number b a fraction and divide a fraction by a whole number?
- How can the strategy draw a diagram help you solve fraction division problems by writing a multiplication sentence?
- How do you write a ratio?
- How does a fraction represent division?
- How can you divide fractions by solving a related multiplication sentence?
- How do you complete ratio tables?
- How can you use diagrams, equations, and story problems to represent division?

Weekly Learning Activities and Pacing Guide			
Topic & # Days	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**
Big Ideas Chapter 6 (13 days total)	5.NBT.B.6 5.NBT.B.6 5.NBT.B.6 5.NBT.B.6 5.NBT.B.6 5.NBT.B.6 MATH.6.NS.B.2	**Obj. We are learning to**: ● Use multiplication to divide. ● Use place value and division facts to find quotients. ● Use division facts and compatible numbers to estimate quotients. ● Divide multi-digit numbers by one-digit numbers. ● Use an area model and partial quotients to divide. ● Use partial quotients to divide with a remainder. ● With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.	**Activities:** Chapter 6 Opener: Divide Whole Numbers Lesson 6.1: Relate Multiplication and Division Lesson 6.2: Division Patterns Lesson 6.3: Estimate Quotients Lesson 6.4: Divide by One-Digit Numbers Lesson 6.5: Use Partial Quotients to Divide by Two-Digit Numbers Lesson 6.6: Use Partial Quotients with a Remainder End of Chapter 6: Divide Whole Numbers End of Chapter 6: Divide Whole Numbers Gr 6 Ch 2 lesson 2.6 **Materials** Big Ideas Materials

		Suggested Formative Assessment(s): ● Big Ideas Grade 5 and 6 Assessments ● Online Assessments ● Lesson Checks ● Exit Tickets ● Unit Project ● Assessment Guide ● iReady	*Stop watches/timers Place value charts (from millions to thousandths) *Multiplication and division charts *Manipulatives (cubes, money, coins, counters) Index cards *Paper (chart, graph, lined, and blank) Base ten blocks Calculators Colored pencils, markers, crayons *Dry erase boards Google Classroom Math Iready Math Reflex Math SplashLearn Khan Academy Math Aids Place Value: http://www.math-aids.com/Place_Value/ http://www.commoncoresheets.com/Values.php http://www.printable-math-worksheets.com/place-value-chart.html
Big Ideas Chapter 7 (12 days total)	5.NBT.A.2 5.NBT.B.7 5.NBT.A.4 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 5.NBT.B.7 MATH.6.NS.B.3	**Obj. We are learning to**: ● Find quotients involving decimals and powers of 10. ● Use compatible numbers to estimate quotients involving decimals. ● Use models to divide decimals by whole numbers. ● Divide decimals by one-digit whole numbers. ● Divide decimals by two-digit whole numbers. ● Use models to divide decimals by decimals. ● Divide decimals by decimals. ● Insert zeros in the dividend when dividing with decimals and whole numbers. ● Solve word problems involving decimals. ● With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	**Activities:** Chapter 7 Opener: Divide Decimals Lesson 7.1: Division Patterns with Decimals Lesson 7.2: Estimate Decimal Quotients Lesson 7.3: Use Models to Divide Decimals by Whole Numbers Lesson 7.4: Divide Decimals by One-Digit Numbers Lesson 7.5: Divide Decimals by Two-Digit Numbers Lesson 7.6: Use Models to Divide Decimals Lesson 7.7: Divide Decimals Lesson 7.8: Insert Zeros in the Dividend Lesson 7.9: Problem Solving: Decimal Operations End of Chapter 7: Divide Decimals End of Chapter 7: Divide Decimals Gr. 6 ch 2 lesson 2.7 **Materials** Big Ideas Materials *Stop watches/timers Place value charts (from millions to thousandths) *Multiplication and division charts

		Suggested Formative Assessment(s): ● Big Ideas Grade 5 and 6 Assessments ● Online Assessments ● Lesson Checks ● Exit Tickets ● Unit Project ● Assessment Guide ● iReady	*Manipulatives (cubes, money, coins, counters) Index cards *Paper (chart, graph, lined, and blank) Base ten blocks Calculators Colored pencils, markers, crayons *Dry erase boards Google Classroom Math Iready Math Reflex Math SplashLearn Khan Academy Math Aids Place Value: http://www.math-aids.com/Place_Value/ http://www.commoncoresheets.com/Values.php http://www.printable-math-worksheets.com/place-value-chart.html
Big Ideas Chapter 8 (12 days total)	5.NF.A.1 5.NF.A.1 5.NF.A.2 5.NF.A.1 5.NF.A.1 5.NF.A.2 5.NF.A.1 5.NF.A.2 5.NF.A.1 5.NF.A.2 5.NF.A.1 5.NF.A.2 5.NF.A.1 5.NF.A.2	**Obj. We are learning to**: ● Write fractions in simplest form ● Estimate sums and differences of fractions. ● Write fractions using a common denominator. ● Add fractions with unlike denominators. ● Subtract fractions with unlike denominators. ● Add mixed numbers with unlike denominators. ● Subtract mixed numbers with unlike denominators. ● Solve multi-step word problems involving fractions and mixed numbers. **Suggested Formative Assessment(s)**: ● Big Ideas Grade 5 and 6 Assessments ● Online Assessments ● Lesson Checks ● Exit Tickets ● Unit Project ● Assessment Guide ● iReady	**Activities:** Chapter 8 Opener: Add and Subtract Fractions Lesson 8.1: Simplest Form Lesson 8.2: Estimate Sums and Differences of Fractions Lesson 8.3: Find Common Denominators Lesson 8.4: Add Fractions with Unlike Denominators Lesson 8.5: Subtract Fractions with Unlike Denominators Lesson 8.6: Add Mixed Numbers Lesson 8.7: Subtract Mixed Numbers Lesson 8.8: Problem Solving: Fractions End of Chapter 8: Add and Subtract Fractions End of Chapter 8: Add and Subtract Fractions End of Chapter 8: Add and Subtract Fractions **Materials** Big Ideas Materials *Stop watches/timers Place value charts (from millions to thousandths) *Multiplication and division charts *Manipulatives (cubes, money, coins, counters) Index cards *Paper (chart, graph, lined, and blank) Base ten blocks Calculators

			Colored pencils, markers, crayons *Dry erase boards Google Classroom Math Iready Math Reflex Math SplashLearn Khan Academy Math Aids Place Value: http://www.math-aids.com/Place_Value/ http://www.commoncoresheets.com/Values.php http://www.printable-math-worksheets.com/place-value-chart.html
Big Ideas Chapter 9 (11 days total)	5.NF.B.4a 5.NF.B.6 5.NF.B.4a 5.NF.B.6 5.NF.B.4a 5.NF.B.6 5.NF.B.4a 5.NF.B.6 5.NF.B.4a 5.NF.B.6 5.NF.B.4b 5.NF.B.6 5.NF.B.6 5.NF.B.5a 5.NF.B.5b	**Obj. We are learning to**: ● Multiply whole numbers by fractions. ● Multiply fractions by whole numbers. ● Multiply fractions and whole numbers. ● Use models to multiply a fraction by a fraction. ● Multiply a fraction by a fraction. ● Find areas of rectangles. ● Multiply a mixed number by a mixed number. ● Compare a product to each of its factors. **Suggested Formative Assessment(s)**: ● Big Ideas Grade 5 and 6 Assessments ● Online Assessments ● Lesson Checks ● Exit Tickets ● Unit Project ● Assessment Guide ● iReady	**Activities:** Chapter 9 Opener: Multiply Fractions Lesson 9.1: Multiply Whole Numbers by Fractions Lesson 9.2: Use Models to Multiply Fractions by Whole Numbers Lesson 9.3: Multiply Fractions and Whole Numbers Lesson 9.4: Use Models to Multiply Fractions Lesson 9.5: Multiply Fractions Lesson 9.6: Find Areas of Rectangles Lesson 9.7: Multiply Mixed Numbers Lesson 9.8: Compare Factors and Products End of Chapter 9: Multiply Fractions End of Chapter 9: Multiply Fractions Gr 6 ch 2 lesson 2.1 **Materials** Big Ideas Materials *Stop watches/timers Place value charts (from millions to thousandths) *Multiplication and division charts *Manipulatives (cubes, money, coins, counters) Index cards *Paper (chart, graph, lined, and blank) Base ten blocks Calculators Colored pencils, markers, crayons *Dry erase boards Google Classroom Math Iready Math

			Reflex Math SplashLearn Khan Academy Math Aids Place Value: http://www.math-aids.com/Place_Value/ http://www.commoncoresheets.com/Values.php http://www.printable-math-worksheets.com/place-value-chart.html
Big Ideas Chapter 10 (7 days total)	5.NF.B.3 5.NF.B.3 5.NF.B.7b 5.NF.B.7c 5.NF.B.7a 5.NF.B.7c 5.NF.B.7c MATH.6.NS.A.1	**Obj. We are learning to**: ● Understand how fractions relate to division. ● Understand how mixed numbers relate to division. ● Divide whole numbers by unit fractions. ● Divide fractions ● Divide unit fractions by whole numbers. ● Solve multi-step word problems involving division with fractions. **Suggested Formative Assessment(s)**: ● Big Ideas Grade 5 and 6 Assessments ● Online Assessments ● Lesson Checks ● Exit Tickets ● Unit Project ● Assessment Guide ● iReady	**Activities:** Lesson 10.1: Interpret Fractions as Division Lesson 10.2: Mixed Numbers as Quotients Lesson 10.3: Divide Whole Numbers by Unit Fractions Gr 6 Ch 2 lesson 2.2 Lesson 10.4: Divide Unit Fractions by Whole Numbers Lesson 10.5: Problem Solving: Fraction Division End of Chapter 10: Divide Fractions End of Chapter 10: Divide Fractions **Materials** Big Ideas Materials *Stop watches/timers Place value charts (from millions to thousandths) *Multiplication and division charts *Manipulatives (cubes, money, coins, counters) Index cards *Paper (chart, graph, lined, and blank) Base ten blocks Calculators Colored pencils, markers, crayons *Dry erase boards Google Classroom Math Iready Math Reflex Math SplashLearn Khan Academy Math Aids Place Value: http://www.math-aids.com/Place_Value/ http://www.commoncoresheets.com/Values.php http://www.printable-math-worksheets.com/place-value-chart.html

Technology Integration	Interdisciplinary Connections	21st Century Life and Career Skills
• Math Playground - http://www.mathplayground.com/grade_5_games.html • Khan Academy - http:www.//khanacademy.org/math/cc-fifth-grade-math • Illustrative Mathematics - http:www.//illustrativemathematics.org • Prodigy - http:www.//prodigygame.com • Learn Zillion - http:www.//learnzillion.com • aaamath - http:www.//aaamath.com/grade5.html • Math is Fun - https://www.mathsisfun.com/ • Sheppard Software - http://www.sheppardsoftware.com/math.htm • Adapted Mind - http://adaptedmind.com • Internet 4 Classrooms - http://internet4classrooms.com • Academic Skill Builders - http://arcademicskillbuilders.com • Math Play - http://www.math-play.com • Class K-12 - https://www.classk12.com • Figure This - https://figurethis.nctm.org/challenges/math_index.htm • Freckle Education - https://www.freckle.com • Greg Tang Math - https://gregtangmath.com • 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including	Next Gen Science Standards (5. Structure and Properties of Matter Unit have connections to 5.NBT.A.1; 5.NF.B.7; 5.MD.A.1; 5.MD.C.3; 5.MD.C.4) Next Gen Science Standards (5. Matter and Energy in Organisms and Ecosystems Unit have connections to 5.MD.A.1)	• CRP2. Apply appropriate academic and technical skills. • CRP4. Communicate clearly and effectively and with reason. • CRP6. Demonstrate creativity and innovation. • CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. • CRP11. Use technology to enhance productivity.

solving problems. • 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue. • 8.1.5.A.4 Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data. • 8.1.5.A.5 Create and use a database to answer basic questions. • 8.1.5.A.6 Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data.		

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

ELA Enduring Understanding Statements