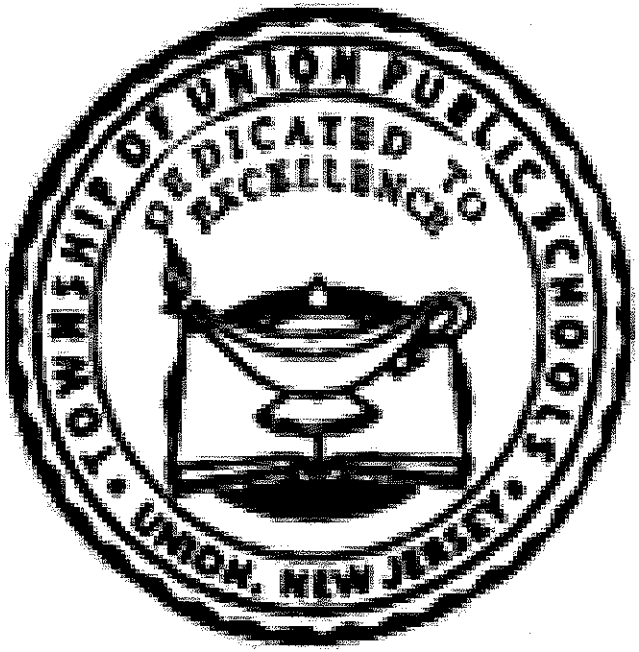
TOWNSHIP OF UNION PUBLIC SCHOOLS



Grade 5 Mathematics
Accelerated Curriculum Guide
2014/2015

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TOWNSHIP OF UNION PUBLIC SCHOOLS

Administration

Acting Superintendent ..... **Mr. Gregory Tatum**

Assistant Superintendent ..... **Dr. Noreen Lishak**

Director of Student Information/Technology ..... **Ms. Ann M. Hart**

DEPARTMENT SUPERVISORS

Nicole Ahern	School Counseling
Jason Killian	Special Services: PreK - 8
Joseph Seugling	Special Services: 9 - 12
Donna Wozniak	Special Services: PreK - 8

10-Month

Maureen Corbett	English: PreK - 2, Social Studies: PreK - 2
Deborah Ford	Mathematics: 3 - 5, Science: 3 - 5
Libby Galante	Social Studies: 6 - 12, Business
Robert Ghiretti	English: 3 - 5, Social Studies: 3 - 5
Maureen Guilfoyle	Science: 6 - 12
Yvonne Lorenzo	Career Ed, World Lang., ESL, Computers, G&T
Mary Malyska	English: 6-12, Library/Media
Theresa Matthews	Mathematics: PreK - 2, Science: PreK - 2
Jason Mauriello	Mathematics: 6-12
Ron Rago	Art, Music

Mathematics Grade 5

Curriculum Committee:

Ashley DelValle

Kristin Nunes

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Mission Statement

The Township of Union Board of Education believes that every child is entitled to an education designed to meet his or her individual needs in an environment that is conducive to learning. State standards, federal and state mandates, and local goals and objectives, along with community input, must be reviewed and evaluated on a regular basis to ensure that an atmosphere of learning is both encouraged and implemented. Furthermore, any disruption to or interference with a healthy and safe educational environment must be addressed, corrected, or when necessary, removed in order for the district to maintain the appropriate educational setting.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- Develop reading, writing, speaking, listening, and mathematical skills.
- Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.
- Acquire and use the skills and habits involved in critical and constructive thinking.
- Develop a code of behavior based on moral and ethical principals.
- Work with others cooperatively.
- Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.
- Acquire a knowledge and understanding of the physical and biological sciences.
- Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.
- Appreciate and understand literature, art, music, and other cultural activities.
- Develop an understanding of the historical and cultural heritage.
- Develop a concern for the proper use and/or preservation of natural resources.
- Develop basic skills in sports and other forms of recreation.

Course Description

The fifth grade curriculum is aligned with the Common Core State Standards for mathematics:

5.OA Operations and Algebraic Thinking
5.NBT Number and Operations in Decimals
5.NF Number and Operations - Fractions
5.MD Measure and Data
5.G Geometry
6.RP Ratios and Proportional Relationships
6.NS The Number System

The content emphases for this grade level are:

- Developing an understanding of and fluency with addition, subtraction, multiplication, and division of decimals
- Developing an understanding of and fluency with addition, subtraction, multiplication, and division of fractions
- Describing two- and three-dimensional shapes and analyzing their properties, including area and volume

These focal points will be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations. The purpose is "to enable all of New Jersey's children to acquire the mathematical skills, understandings and attitudes that they will need to be successful in their careers and daily lives"

Recommended Textbooks:

Houghton Mifflin Harcourt/GO MATH Grade 5
Houghton Mifflin Harcourt/GO MATH Grade 6

Resources:

5th Grade CCSS Resource Packet

Course Proficiencies

Students will be able to…

5.OA Operations and Algebraic Thinking

- Communicate understanding of math concepts
- Use manipulatives and/or models effectively
- Apply appropriate strategies in problem-solving
- Write and interpret numerical expressions with grouping symbols
- Analyze patterns and relationships

5.NBT Number and Operations in Decimals

- Use whole-number exponents to denote powers of 10
- Read, write, and compare decimals to thousandths
- Use place value understanding to round decimals to any place
- Fluently multiply multi-digit whole numbers
- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors
- Add, subtract, multiply, and divide decimals to the hundredths

5.NF Number and Operations – Fractions

- Add & subtract fractions with unlike denominators
- Solve word problems involving addition and subtraction of fractions
- Multiply a fraction or whole number by a fraction
- Divide unit fractions by whole numbers and whole numbers by unit fractions

5.MD Measurement and Data

- Convert like measurement units within a given measurement system
- Represent and interpret data
- Understand concepts of volume measurement
- Solve real world and mathematical problems involving volume

5.G Geometry

- Graph points in the first quadrant of the coordinate plane
- Interpret coordinate values of points in the context of the situation
- Classify two-dimensional figures into categories based on properties

ACCELERATED MATH:

6RP Ratios and Proportional Relationships

- Understand ratio concepts and use ratio reasoning to solve problems

6.NS The Number System

- Apply and extend previous understandings of numbers to the system of rational numbers

Curriculum Units

Unit 1: Operations and Algebraic Thinking

Unit 2: Number and Operations in Decimals

Unit 3: Number and Operations - Fractions

Unit 4: Measurement and Data

Unit 5: Geometry

6th Grade Unit 1: Ratios and Proportional Relationships

6th Grade Unit 2: The Number System

Pacing Guide

Chapter	Introduction	Instruction	Assessment	TOTAL
1	1 day	13 days	2 days	16
2	1 day	6 days	2 days	8
3	1 day	13 days	2 days	16
4	1 day	7 days	2 days	9
5	1 day	6 days	2 days	8
6	1 day	8 days	2 days	11
7	1 day	7 days	2 days	10
8	1 day	4 days	2 days	7
9	1 day	5 days	2 days	8
10	1 day	6 days	2 days	9
11	1 day	7 days	2 days	10
6th Grade Accelerated				**33**
Chapter	**Introduction**	**Instruction**	**Assessment**	**TOTAL**
3	1 day	10 days	2 days	13
4	1 day	8 days	2 days	11
5	1 day	6 days	2 days	9

- Total days of 5th Grade Instruction: 112

- Total days of 6th grade Instruction: 33

-Misc Days/NJASK prep: 35

Unit 1: 5.OA Operations and Algebraic Thinking

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
5.OA.1 & 5.OA.2 Numerical Expressions • In what order must operations be evaluated …to find the solution to a problem?...when there are parentheses within parentheses? • How can you use a numerical expression to describe a situation?	**5.OA.1 & 5.OA.2 Numerical Expressions** **SWBAT :** • Use the order of operations to evaluate numerical expressions including those that contain parentheses, brackets, and braces. • Write numerical expression to describe a situation.	**5.OA.1 & 5.OA.2 Numerical Expressions** • PEMDAS Hopscotch • Order of Operations Bowling • Create your own PEMDAS acronym saying • Exponents Dice Game **Cross Curricular** Counting on Frank – MATH & ENGLISH	**5.OA.1 & 5.OA.2 Numerical Expressions** • **Sample SCR Item:** Emma has eleven fish in her aquarium. She buys four more. Write the expression that matches the situation numerically. (Ans: 11 + 4) **Sample MC Item:** Solve $3^2 + 6 \div (9 - 2)$ a. 3 *b. 2 c. 5. d. 4 • **Sample ECR Item:** Who is Right? Ms. Robertson put the following expression on the board. She asked all students to solve the problem on their own and explain the solving process.

			$3^2 + 4 \times 9 - 10$ Kayla said the correct answer is 107. Bill said the correct answer is 35. - Solve the problem and show your work. - Who is correct? -If Kayla is wrong, what was the mistake? Explain. **Performance Assessment** The Order of Operations Brochure

5.OA.3 Patterns & Relationships	5.OA.3 Patterns & Relationships	5.OA.3 Patterns & Relationships	5.OA.3 Patterns & Relationships
• How can you identify a relationship between two numerical patterns? • How could you use the strategy *solve a simpler problem* to help your solve a problem with patterns? • How can you write and graph an ordered pair on a coordinate grid using two numerical patterns?	**SWBAT:** • Use two rules to generate a numerical pattern and identify the relationship between corresponding terms in patterns. • Solve problems using the strategy *Solve a simpler problem.* • Graph the relationship between two numerical patterns on a coordinate grid.	• Find the next term Race • Patterns: I have...you have matching game • Patterns: Quiz, Quiz, Trade activity	**Sample MC Item:** Last year, the cafeteria at Kyle's school recycled 100 pounds of the trash that was collected. This year was the second year of recycling, and the cafeteria recycled twice as much. If the amount of trash the cafeteria recycles doubles each year, how much will be recycled in the fourth year? a. 1600 pounds * b. 800 pounds c. 600 pounds d. 400 pounds **Sample MC Item:** The following pattern has a rule of X3, -12. 7, 21, 9, 27, 15, 45, 33,... What are the next three numbers in the pattern? a. 99, 87, 261* b. 21, 24, 12 c. 99, 297, 285 d. 21, 63, 51 **Sample MC Item**: At a science lab, a cell was divided in two. Then each of those cells were divided in

			two. Finally, each of those cells were divided in two. How many total cells were there? a. 2 b. 6 *c. 8 d. 12 **Exemplar** Exemplars Gr 3-5 pg143-152

Unit 2: 5.NBT Number and Operations in Decimals

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
5.NBT.1 – 5.NBT.4 Place Value System • How can you describe the relationship between 2 place value positions? • How do you read, write, and represent whole numbers through hundred millions and decimals through thousandths? • How can you use an exponent to show powers of 10 • How can you use a basic fact and a pattern to multiply by a 2- digit #? • How can you use place value to compare, order , and round decimals?	**5.NBT.1 – 5.NBT.4 Place Value System** **SWBAT:** • Recognize the 10 to 1 relationship between 2 place value positions. • Read and write whole numbers through hundred millions and decimals through thousandths. • Write and evaluate repeated factors in exponent form. • Use basic fact and a pattern to multiply mentally by multiples of 10,100, and 1,000. • Compare, order, & round	**5.NBT.1 – 5.NBT.4 Place Value System** • Place value number line • Place Value Snakes • Take a Chance! • Place Value Communicators • Decimal War • Decimal Shuffle • Decimal: I Have…You Have Matching Game • Dueling Duos	**5.NBT.1 – 5.NBT.4 Place Value System** • **Sample SCR Item:** What's the error? Matt wrote five million two hundred thousand seven hundred eighty four as 5,025,784. What's wrong and write it correctly in standard form. (Ans: 5,205,784) • **Sample SCR Item:** $10^3 = 10^1 \times 10^n$ What is the value of n. (Ans: 2) • **Sample MC Item:** 4.85 ☐ 4.8 *a. > b. < c. = **Performance Assessment**

	decimals to thousandths using place value.		Representing Decimals Match Chart Cut and Paste **Exemplar** Exemplars Gr3-5 Pg 199-206

5.NBT.5 – 5.NBT.7 Operations with Decimals	5.NBT.5 – 5.NBT.7 Operations with Decimals	5.NBT.5 – 5.NBT.7 Operations with Decimals	5.NBT.5 – 5.NBT.7 Operations with Decimals
• How can you use properties of operations to solve problems? • How do you multiply by 1- and 2- digit numbers? • How is multiplication used to solve a division problem? • How can you divide whole numbers? • How can you use compatible numbers to estimate quotients? • How can you estimate decimal sums and differences? • How can you use base ten blocks to model decimal addition and subtraction? • How can you add and subtract decimals?	**SWBAT:** • Use properties of operations to solve problems. • Multiply by 1- and 2- digit numbers. • Use multiplication to solve division problems. • Divide -3 and 4- digit dividends by 1- and 2- digit divisors. • Estimate quotients using compatible numbers. • Make reasonable estimates of decimal sums and differences. • Model decimal addition and subtraction using base ten blocks. • Add and subtract decimals using place value.	• Conquering Division Dueling Digits • McDonald's Rhyme • Decimal Squares (manipulative) • Decimal Magic Squares • Decimal War • Base Ten Block (manipulative) • Fraction People	**Sample SCR Item:** Four friends have three brownies left over from a party. They would like to split them equally. How much should each of them receive? (Answer: 75% or 0.75 or ¾ of a brownie) **Sample SCR Item:** A gallon contains 128 ounces. Paul wants to divide three gallons of apple cider equally among the two dozen friends at his party. How much apple cider will each friend receive? (Answer: 16 oz.) **Sample MC Item:** Debbie has a $5.00 bill. She wants to purchase a notebook for $0.75 and a pen for $0.50. How much money will Debbie have after purchasing the notebook and the pen? (Answer: $3.75) a. $1.25 b. $2.75 c. *$3.75 d. $4.25 **Sample MC Item:** How

• How can you use addition or subtraction to describe a pattern or create a sequence with decimals? • How can you solve decimal multiplication problems? • How can you divide decimals by whole numbers and decimal divisors? • What strategies can you use to place a decimal point in a product/quotient? • How can you estimate decimal products and quotients? • When do you write a zero in the dividend to find a quotient?	• Identify, describe, and create numeric patterns with decimals. • Solve decimal multiplication problems using place value. • Divide decimals by whole number and decimal divisors. • Place the decimal point in decimal multiplication or division. • Divide decimals by whole number and decimal divisors. • Estimate decimal products and quotients. • Write a zero in the dividend to find a quotient.		many numbers between 20 and 50 have no remainder when divided by 6? a. 3 b. 4 * c. 5 d. 6 **Sample SCR Item:** Paula's tractor holds 3 liters of gasoline. Tom's tractor holds 2.4 liters. How much more does one tractor hold than the other? (Answer: 0.6 liters) **Exemplar** Exemplars Gr3-5 pg133-142

Unit 3: 5.NF Number and Operations - Fractions

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
5.NF.1 & 5.NF.2 Add/Subtract Fractions • How can you add and subtract fractions and mixed numbers with unlike denominators? • How can you use renaming to find the difference of two mixed numbers? • How can you make reasonable estimates of fraction sums and differences?	**5.NF.1 & 5.NF.2 Add/Subtract Fractions** **SWBAT:** • Use equivalent fractions to add and subtract fractions and mixed numbers. • Rename to find the difference of two mixed numbers. • Make reasonable estimates of fraction sums and differences.	**5.NF.1 & 5.NF.2 Add/Subtract Fractions** • Fraction Man • Equivalent Fraction Pizza Activities • Calculators – Fractions (manipulative) • The Game of Concentration Match Game • Fraction Strips (manipulative) • Fraction Tiles (manipulative) • Dry Erase Board Fraction Problems (manipulative) • Fraction Dice (manipulative)	**5.NF.1 & 5.NF.2 Add/Subtract Fractions** **Sample ECR Item:** Joe had a pizza party. He ordered 8 pizzas, each cut into 8 slices. When his friends went home, he had ¼ of a pepperoni pizza, 5/8 of a mushroom pizza, ½ of a cheese pizza, and 1/8 of a veggie pizza left over. How much pizza was left over in all? Show one way to get the answer to this problem. Explain your method. Show another way to get the answer to this problem. Explain your method. **Sample SCR Item:** A fifth-grade class will perform an act for the spring talent show. Two-thirds of the class of 24 students wants to perform a skit. The rest of

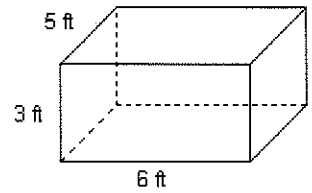
		• Fractions: True or False Game • Fractions: I Have...You Have Game • Sip of Spring **Cross Curricular** History of M&Ms Candies – MATH & SS	the students in the class want to sing a song. The teacher decided that 3/4 of the students must agree on an act before the decision will be final. How many more students would have to choose a skit before ¾ of the students agree on it? (Answer: 2 students) **Performance Assessment** Add/Subtract Fractions Match Cut and Paste **Exemplar** Exemplars Gr3-5 pg153-162

5.NF.3 – 5.NF.7 Multiply/Divide Fractions	5.NF.3 – 5.NF.7 Multiply/Divide Fractions	5.NF.3 – 5.NF.7 Multiply/Divide Fractions	5.NF.3 – 5.NF.7 Multiply/Divide Fractions
• How do you multiply fractions? • How do you multiply mixed numbers? • How can you use a unit tile to find the area of a rectangle with fractional side lengths? • How does a fraction represent division? • How can you divide a whole number by a fraction and divide a fraction by a whole number?	**SWBAT:** • Multiply fractions. • Multiply mixed numbers. • Use a model to multiply two mixed numbers and find the area of a rectangle. • Interpret a fraction as division and solve whole number division problems that result in a fraction or mixed number. • Divide a whole number by a fraction and divide a fraction by a whole number.	• Fraction War • Recipes • Dividing Fractions Song	• **Sample SCR Item:** Mary cuts 5 pans of brownies into eighths. How many 1/8 size brownie pieces does show have now? (Ans: 40) • **Sample SCR Item:** Five cats each ate a quarter of food. How much food did they eat altogether? (Ans: 1 ¼) **Performance Assessment** Grandma's Favorite Cupcakes **Exemplar** Exemplars Gr3-5 pg123-131

Unit 4: 5.MD Measurement and Data

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
5.MD.1 & 5.MD.2 Convert Measurements • How can a line plot help you find an average with data given in fractions? • How can you compare and convert customary units of length, capacity, and weight? • How can you compare and convert metric units?	**5.MD.1 & 5.MD.2 Convert Measurements** **SWBAT:** • Make and use line plots with fractions to solve problems. • Compare, contrast, and convert customary units of length, capacity, and weight. • Compare, contrast, and convert metric units.	**5.MD.1 & 5.MD.2 Convert Measurements** • Measure Man • Metric Number Line Communicator • Conversions: The Game of Concentration • Customary Units of Measure Match • Conversions: I Have / You Have • Guess My Unit	**5.MD.1 & 5.MD.2 Convert Measurements** **Sample MC Item:** If these fractions were graphed on the number line, which of them would be closest to zero? a. 3/5 b. 1/4 c. 3/20 * d. 1/10 **Sample SCR Item:** State a number that is between 1/3 and 0.36. Acceptable answers would include various representations of Real Numbers between 1/3 and .36 (e.g., 0.34, 0.334, 0.35, 7/20, etc.) **Sample ECR Item:** On the number line in your answer folder, plot points for the following numbers. 4/5, 0.6 Label each point. Name two different

			rational numbers that are greater than 0.6 and less than 4/5. (Write one of your numbers in fractional form and write the other number in decimal form.) Explain how you know that each of your numbers is greater than 0.6 and less than 4/5. **Sample ECR Item:** Two students measured the same book shelf. Debbie said the measurement is 3. Tim said the measurement is 36. How can both students be correct? Explain your reasoning. **Sample ECR Item:** Carol measured her height to be 1.5. How can this be possible? Explain your reasoning. **Performance Assessment** Conversions Match Chart Cut and Paste **Exemplar** Exemplars Gr3-5 pg143-152

5.MD.3 – 5.MD.5 Geometric Measurement	5.MD.3 – 5.MD.5 Geometric Measurement	5.MD.3 – 5.MD.5 Geometric Measurement	5.MD.3 – 5.MD.5 Geometric Measurement
• What is a unit cube and how can you use it to build a solid figure? • How can you find the volume of a rectangular prism using the formula/using unit cubes? • How can you use an everyday object to estimate the volume of a rectangular prism?	**SWBAT:** • Understand unit cubes and how they can be used to build a solid figure. • Find the volume of rectangular prisms using the formula and unit cubes. • Estimate the volume of a rectangular prism.	• Cereal Box • Volume Stations • Investigation: Unit Cubes and Volume • Volume Playing Cards • Measuring Volume Activity	• **Sample MC Item:** Find the volume.  a. 80 ft^3 b. 90 ft^2 c. 80 ft^2 *d. 90 ft^3 • **Sample SCR Item:** Patty built a rectangular prism with unit cubes. The base has 12 cm cubes. If the prism was built with 108 cm cubes, what is the height of the prism? (Ans: 9 cm cubes)

Unit 5: 5.G Geometry

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
5.G.1 & 5.G.2 Coordinate Plane • How can you identify and plot points on a coordinate grid? • How can you use a coordinate grid to display data collected in an experiment? • How can you use a line graph to display and analyze real-world data?	**5.G.1 & 5.G.2 Coordinate Plane** **SWBAT:** • Graph and name points on a coordinate grid using ordered pairs. • Collect and graph data on a coordinate grid. • Analyze and display data in a line graph. • Understand and apply the concepts of congruence and symmetry (line and rotational).	**5.G.1 & 5.G.2 Coordinate Plane** • Super Bowl Graph • River Riding Plot the Picture • A.I Plot the Picture **Cross Curricular** Treasure Map Grid – MATH & SS	**5.G.1 & 5.G.2 Coordinate Plane** **Sample SCR Item:** Three vertices of a parallelogram are at the points (0, 0), (2, 4), and (6, 0). What are the coordinates of the fourth vertex? (Answer: (8,4) or (-4,4) or (4, -4). Although not expected to find either of the answers out of the first quadrant, a student would not be penalized for finding such a vertex.)

5.G.3 & 5.G.4 Two-Dimensional Figures	5.G.3 & 5.G.4 Two-Dimensional Figures	5.G.3 & 5.G.4 Two-Dimensional Figures	5.G.3 & 5.G.4 Two-Dimensional Figures
• How can you identify and classify polygons? • How can you classify triangles? quadrilaterals?	**SWBAT:** • Identify and classify polygons. • Classify and draw triangles/quadrilaterals using their properties.	• Polygon Song • Pattern Block (manipulatives) • Toothpick Triangles • Geometry Scavenger Hunt • I Have/You Have • Geoboard (manipulatives) **Cross Curricular** Teaching Tangrams – MATH & ENGLISH	**Sample ECR Item:** Describe the similarities and differences between the following polygons. - Compare and contrast an isosceles triangle and an equilateral triangle. -Compare and contrast a rectangle and a parallelogram.

6th GRADE ACCELERATED Unit 1: Ratios and Proportional Relationships

Unit 1: 6.RP Ratios & Proportional Relationships

Essential Questions	Instructional Objectives/ Skills and Benchmarks *(CPIs)*	Activities	Assessments
6.RP.1 & 6.RP.2 Ratios & Proportional Relationships • What are ratios and how can they be used to solve real life problems? • How do you calculate unit rate and how do you interpret it in context of a real-world scenario?	**6.RP.1 & 6.RP.2 Ratios & Proportional Relationships** **SWBAT:** • Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. • 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. • Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by	**6.RP.1 & 6.RP.2 Ratios & Proportional Relationships** • Modeling ratios with red and yellow counters • Utilizing food advertisements to find unit rates, such as cost per pound of apples • Converting between rate and unit rate to compare prices of food. *For example, 8 oranges for $2 and 12 oranges for $3 have the same unit rate of 4 oranges for $1.*	**6.RP.1 & 6.RP.2 Ratios & Proportional Relationships** **Sample SCR Item:** If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

	reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.		

6th GRADE ACCELERATED Unit 2: The Number System

Unit 2: 6.NS The Number System

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
6.NS.5 - 6.NS.8 The Number System What are rational numbers? How can you represent negative numbers in real life and on a number line and coordinate plane? How can you find and interpret the absolute value of rational numbers?	**6.NS.5 - 6.NS.8 The Number System** • Understand that positive and negative numbers are used together to describe quantities having opposite directions or values • 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. • Understand ordering and absolute value of rational numbers. • Solve real-world and mathematical problems by graphing points in all four	**6.NS.5 - 6.NS.8 The Number System** • Utilize number lines (horizontal and vertical) *For example, show -50 is less than -5. Another example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.* • Comparison of temperature. *For example,* • *write –3 °C > –7 °C to express the fact that –3 °C is warmer than –7 °C.* • Account balance activities. *For example,*	**6.NS.5 - 6.NS.8 The Number System** • **Sample MC Item:** On February 3, 1996, a record low temperature of -47°F was reached in Iowa. The temperature the next day was a little warmer. Which could have been the temperature the next day? a) -51°F b)-49°F c) -47°F d)-45°F (Answer: D) • **Sample MC Item:** While scuba diving, Amelia explored the ocean at an elevation of -30 feet. Ricardo was closer to the surface of the water than Amelia. Which describes Ricardo's depth? a) depth of greater than -30 feet

	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.	*recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.* • Real-world scenarios for absolute value. *For example, discuss two people living the same distance from a location but in opposite directions.* • Plotting points on all 4 quadrants that create a picture.	b) depth of greater than 30 feet c) depth of less than 30 feet d) depth of less than -30 feet (Answer: C)

Common Core State Standards
Mathematics

Operations and Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

6th Grade Unit 1 – Ratios and Proportional Relationships

- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- 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.
- Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

6th Grade Unit 2 – The Number System

- Apply and extend previous understandings of numbers to the system of rational numbers.
- Understand a rational number as a point on the number line.
- Understand ordering and absolute value of rational numbers.
- Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

New Jersey Scoring Rubric

Rubrics - SCORING STUDENT RESPONSES

Holistic Scoring Guide for Mathematics Open-Ended (OE) Items (Generic Rubric)

3 - Point Response
The response shows complete understanding of the problem's essential mathematical concepts. The student executes procedures completely and gives relevant responses to all parts of the task. The response contains few minor errors, if any. The response contains a clear, effective explanation detailing how the problem was solved so that the reader does not need to infer how and why decisions were made.

2 - Point Response
The response shows nearly complete understanding of the problem's essential mathematical concepts. The student executes nearly all procedures and gives relevant responses to most parts of the task. The response may have minor errors. The explanation detailing how the problem was solved may not be clear, causing the reader to make some inferences.

1 - Point Response
The response shows limited understanding of the problem's essential mathematical concepts. The response and procedures may be incomplete and/or may contain major errors. An incomplete explanation of how the problem was solved may contribute to questions as to how and why decisions were made.

0 - Point Response
The response shows insufficient understanding of the problem's essential mathematical concepts. The procedures, if any, contain major errors. There may be no explanation of the solution or the reader may not be able to understand the explanation. The reader may not be able to understand how and why decisions were made.