

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<i>Unit 1: Place Value and Decimal Fractions</i> (Approximate Instructional Time: 4 weeks)		
NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> ● 5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left ● 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): Multiplicative patterns on the place value chart <ul style="list-style-type: none"> ● <i>Quantitative relationships exist between the digits in place value positions of a multi-digit number.</i> Students are able to: <ul style="list-style-type: none"> ● explain that a digit in one place represents 1/10 of what it would represent in the place to its left. ● explain that a digit in one place represents ten times what it would represent in the place to its right. ● reason concretely and pictorially using place value understanding to relate adjacent base ten units from <i>millions to thousandths</i>. ● reason abstractly using place value understanding to relate adjacent base ten units from <i>millions to thousandths</i>. <p>Learning Goal 1: Explain that a digit in one place represents 1/10 of what it would represent in the place to its left and ten times what it would represent in the place to its right.</p>
<ul style="list-style-type: none"> ● 5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. 	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): Multiplicative patterns on the place value chart <p>Students are able to:</p> <ul style="list-style-type: none"> ● explain patterns in the number of zeros of the product when multiplying a whole number by powers of 10. ● write powers of 10 using whole-number exponents. ● use exponents to name place value units and explain patterns in the placement of the decimal point. ● use exponents to denote powers of 10 with application to metric

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<p>conversions.</p> <p>Learning Goal 2: Explain patterns in the number of zeros in the product when a whole number is multiplied by a power of 10; represent powers of 10 using whole-number exponents.</p>
<ul style="list-style-type: none"> 5.NBT.A.3. Read, write, and compare decimals to thousandths. 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Decimal fractions and place value patterns</p> <p>Students are able to:</p> <ul style="list-style-type: none"> read and write decimals to thousandths using base-ten numerals, number names, and expanded form by applying place value reasoning. compare decimal fractions to thousandths using $>$, $=$, and $<$ symbols. <p>Learning Goal 3: Compare decimal fractions to thousandths using $>$, $=$, and $<$ for numbers presented as base ten numerals, number names, and/or in expanded form.</p>
<ul style="list-style-type: none"> 5.NBT.A.4. Use place value understanding to round decimals to any place. 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Place value and rounding decimal fractions</p> <p>Students are able to:</p> <ul style="list-style-type: none"> round a given decimal to any place using place value understanding and the vertical number line. <p>Learning Goal 4: Use place value understanding and a vertical number line to round decimals.</p>
<ul style="list-style-type: none"> 5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *(benchmarked) 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Adding, Subtracting, Multiplying & Dividing Decimals</p> <p>Students are able to:</p> <ul style="list-style-type: none"> add and subtract decimals to hundredths using concrete models and drawings. multiply and divide decimals to hundredths using concrete models and drawings. multiply a decimal fraction by single-digit whole numbers, relate to a written method through application of the area model and

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<p>place value understanding, and explain the reasoning used.</p> <ul style="list-style-type: none"> • add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. • relate the strategy to the written method and explain the reasoning used. <p>Learning Goal 5: Add, subtract, multiply, and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; explain the reasoning used, relating the strategy to the written method.</p>
<p><u>Interdisciplinary Connections:</u></p> <p><u>NGSS Appendix for Alignment</u></p>	<p><u>Science:</u></p> <p>5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: <i>Science examples:</i></p> <p>(1) <i>If you split a salt grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end?</i></p> <p>(2) <i>Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a whole number without using exponents. (5.NBT.A.1, 5.NF.B.7)</i></p> <p>(3) <i>Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1)</i></p> <p>(4) <i>Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)</i></p> <p>5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: <i>Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)</i></p> <p>5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. <i>Science example: In a diagram showing matter flows in a system, assign values to the arrows in a</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

diagram to show flows quantitatively.

5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: *Science example: (1)The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other, aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)*

(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: *Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2)*

Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. *Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.*

3–5-ETS1 As part of this work, teachers should give students opportunities to use the four operations to solve problems: *Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)*

English-Language Arts:

RI.5.7. *Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.*

RI.5.8. *Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).*

RF.5.4. *Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.*

W.5.2. *Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*

A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.

B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).

D. Use precise language and domain-specific vocabulary to inform about or explain the topic.

E. Provide a conclusion related to the information of explanation presented.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p><i>W.5.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</i></p> <p><i>W.5.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</i></p> <p><i>W.5.8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</i></p> <p><i>W.5.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</i> <i>B. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</i></p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

--	--

District/School Primary and Supplementary Resources	
<p>Primary Resource:</p> <p><u>Eureka Math (Unbound Ed - Module 1)</u></p> <p>Zearn.org</p>	<p>Supplementary Resources:</p> <p><u>Number Talks: Building Numerical Reasoning</u></p> <p><u>Sadlier Progress In Mathematics Online Resources - Grade 5</u></p> <p><i>Sadlier Progress in Mathematics</i> Workbook</p> <p><i>Study Island</i></p> <p><i>Excel Math</i> (Publisher: AnsMar)</p> <p>Khan Academy</p> <p><u>Visual Patterns: Gr. K-12</u></p> <p><u>Number Strings</u></p> <p><u>Common Core Progression Documents</u></p> <p>Performance Tasks are available for use from the following sites:</p> <p><u>Illustrative Mathematics</u></p> <p><u>Coherence Map</u></p> <p><u>Inside Mathematics Problems of the Month</u></p> <p><u>Grade 5 YouCubed Tasks</u></p>
Suggested Tools & Representations:	Suggested Tasks for Use During Unit
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Number lines (a variety of templates, including a large one for the back wall of the classroom)</i> <input type="checkbox"/> <i>Place value charts (at least one per student for an insert in their personal board)</i> <input type="checkbox"/> <i>Place value disks</i> 	<p><u>5.NBT.A.1 Which number is it?</u></p> <p><u>5.NBT.A.1 Millions and Billions of People</u></p> <p><u>5.NBT.A.2 Marta's Multiplication Error</u></p> <p><u>5.NBT.A.2 Multiplying Decimals by 10</u></p> <p><u>5.NBT.A.3 Placing Thousandths on the Number Line</u></p> <p><u>5.NBT.A.4 Rounding to Tenths and Hundredths</u></p> <p><u>5.NBT.B.7 The Value of Education</u></p> <p><u>5.MD.A.1, 5.NF.B.3 Converting Fractions of a Unit into a Smaller Unit</u></p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Sprints ● Self-assessment by students with guidance from teacher. ● Exit tickets ● Zearn teacher reports ● Star and Accelerated Math programs 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● <i>Sadlier</i> Unit Assessments ● <i>Eureka Math</i> Mid- and End- Module Assessments (Constructed response item with rubric) ● Teacher/District created benchmark assessments
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i> 	<ul style="list-style-type: none"> ● Exponent (how many times a number is to be used in a multiplication sentence) ● Millimeter (a metric unit of length equal to one-thousandth of a meter) ● Thousandths (related to place value)
Focus Mathematical Concepts	
<p><u>Grade Level Fluency Requirement:</u></p> <ul style="list-style-type: none"> ◆ 6.NS.B.2 ◆ 6.NS.B.3 Multi-digit division Multi-digit decimal operations. <p><u>Prerequisite skills</u></p> <p><i>Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.</i></p> <p><u>Coherence Map</u></p> <p>4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.

4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.*

4.NF.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or mixed numbers.

Common Misconceptions:

- Students will forget to bring down zeros when multiplying by multi digit numbers.
- Students will struggle with long division algorithm.
- Students often forget to put a zero in the Quotient of an answer when the divisor is too large for the dividend.
- Students often have a difficult time using benchmarks when dividing by multi-digit numbers to give themselves a better idea of the number of times dividend can be divided by the divisor.
- Students will struggle with the idea of going left to right when a problem has both addition/subtraction and multiplication/division.
- When computing the value of an exponential number, students may use repeated addition instead of multiplication.
- Thinking that the operation that needs to be performed ($+$, $-$, \times , \div) is defined by the numbers in the problem. For example: $5 + 3 \times 10$, knows to do 3×10 first but then does $5 + 3$, rather than $5 + 30$.
- Students often believe that the longer the number the greater the number. With whole numbers, a 5-digit
- number is always greater than a 1-, 2-, 3-, or 4-digit number. However, with decimals a number with one decimal place may be greater than a number with two or three decimal places. For example, 0.5 is greater than 0.12 , 0.009 or 0.499 .
- A common misconception that students have when trying to extend their understanding of whole number place value to decimal place value is that as you move to the left of the decimal point, the number increases in value. Reinforcing the concept of powers of ten is essential for addressing this issue.
- Students under-generalize the results of multiplication by powers of 10. To find products like $3 \times 50 = 150$ or $30 \times 50 = 1,500$, they must “work the product out” using a long method of computation.
- A common misconception students have when working with inequalities, is that they forget there are multiple answers.
- A common misconception when translating a word problem into an expression, is that students may use more than one variable or forget to place parentheses in the appropriate place.
- A common misconception students have when working with variables is that when it is used in an expression, it can be an infinite number of values. When working with variables in equations, it has only one value.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Unit 2: Multi-digit Whole Number and Decimal Fraction Operations

(Approximate Instructional Time: 7 weeks)

NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> 5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. 	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): Mental strategies for multi-digit whole number multiplication & division Students are able to: <ul style="list-style-type: none"> multiply multi-digit whole numbers and multiples of 10 using place value patterns and the distributive and associative properties. use basic facts to approximate quotients with two-digit divisors. use basic facts to approximate decimal quotients with two-digit divisors, reasoning about the placement of the decimal point. <p>Learning Goal 1: Use mental strategies to approximate products and quotients for whole numbers, fractions and decimals.</p>
<ul style="list-style-type: none"> 5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. 	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): Mental strategies for multi-digit whole number division Students are able to: <ul style="list-style-type: none"> estimate multi-digit products by rounding factors to a basic fact and using place value patterns. use divide by 10 patterns for multi-digit whole number division. divide decimal dividends by multiples of 10, reasoning about the placement of the decimal point and making connections to a written method. divide decimal dividends by two-digit divisors, estimating quotients, reasoning about the placement of the decimal point, and making connections to a written method. <p>Learning Goal 2: Divide by 10 and two-digit divisors by reasoning about patterns and place value, and make connections to a</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		written method.
<ul style="list-style-type: none"> 5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm. <i>*(benchmarked)</i> 	<p>MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): The standard algorithm for multi-digit whole number multiplication.</p> <p>Students are able to:</p> <ul style="list-style-type: none"> fluently multiply a whole number of up to a four digits by a whole number of up two digits using the standard algorithm with accuracy and efficiency, and use estimation to check for reasonableness of the product. fluently multiply multi-digit whole numbers using the standard algorithm to solve multi-step word problems <p>Learning Goal 3: Use the standard algorithm to multiply a whole number of up to a four digits by a whole number of up two digits and to solve multi-step word problems.</p>
<ul style="list-style-type: none"> 5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Partial quotients and multi-digit whole number division</p> <p>Students are able to:</p> <ul style="list-style-type: none"> use basic facts to approximate quotients with two-digit divisors. divide two- and three- digit dividends by multiples of 10 with single-digit quotients and make connections to a written method. divide two- and three- digit dividends by two-digit divisors with single-digit quotients and make connections to a written method. divide to find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies based on place value, properties of operations, and the relationship between multiplication and division. represent these operations with equations, rectangular arrays, and area models, and explain the calculation by referring to the model (equation, array, or area model). solve division word problems involving multi-digit division with group size unknown and the number of groups unknown. <p>Learning Goal 4: Calculate whole number quotients of whole numbers with 4-digit dividends and 2-digit divisors; explain and represent calculations with equations, rectangular</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		arrays, and area models.
<ul style="list-style-type: none"> 5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *(benchmarked) 	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Decimal multi-digit multiplication</p> <p>Students are able to:</p> <ul style="list-style-type: none"> connect area and visual models and the distributive property to partial products of the standard algorithm without renaming. multiply decimal fractions with tenths by multi-digit whole numbers using place value understanding to record partial products. multiply decimal fractions by multi-digit whole number through conversion to a whole number problem and reasoning about the placement of the decimal. reason about the product of a whole number and a decimal with hundredths using place value understanding and estimation. <p>Learning Goal 5: Use area models and the distributive property to build conceptual understanding for multiplying decimal fractions.</p>
<ul style="list-style-type: none"> 5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 	<p>MP.1 Make sense of problems and persevere in solving them. MP.5 Use appropriate tools strategically. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): The standard algorithm for multi-digit whole number and decimal multiplication</p> <ul style="list-style-type: none"> <i>Standard convention for performing operations (Order of operations, including grouping symbols)</i> <p>Students are able to:</p> <ul style="list-style-type: none"> evaluate numerical expressions that include grouping symbols (parentheses, brackets or braces). evaluate numerical expressions that include nested grouping symbols (for example, $3 \times [5 + (7 - 3)]$). <p>Learning Goal 6: Evaluate numerical expressions that contain parentheses, brackets and braces.</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<ul style="list-style-type: none"> 5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning</p>	<p>Concept(s): The standard algorithm for multi-digit whole number and decimal multiplication</p> <p>Students are able to:</p> <ul style="list-style-type: none"> write and interpret numerical expressions and compare expressions using a visual model. convert numerical expressions into unit form as a mental strategy for multi-digit multiplication. interpret the quantitative relationships in numerical expressions without evaluating (simplifying) the expression. <p>Learning Goal 7: Write numerical expressions when given a verbal description or word problem; interpret numerical expressions without evaluating them.</p>
<ul style="list-style-type: none"> 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s): Measurement word problems with whole number and decimal multiplication</p> <p>Students are able to:</p> <ul style="list-style-type: none"> use whole number multiplication to express equivalent measurements. use fraction and decimal multiplication to express equivalent measurements. solve multi-step, real world problems that require conversions. <p>Learning Goal 8: Solve two-step word problems involving measurement conversions.</p>
<p>Interdisciplinary Connections:</p> <p>NGSS Appendix for Alignment</p>	<p><u>Science:</u></p> <p>5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: <i>Science examples: (1) If you split a salt grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end?</i></p> <p><i>(2) Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

whole number without using exponents. (5.NBT.A.1, 5.NF.B.7)

(3) Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1)

(4) Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)

5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)

5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In a diagram showing matter flows in a system, assign values to the arrows in a diagram to show flows quantitatively.

5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: Science example: (1) The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other, aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)

(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2)

Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.

3–5-ETS1 As part of this work, teachers should give students opportunities to use the four operations to solve problems: Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p><u>English-Language Arts:</u></p> <p><i>RI.5.7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</i></p> <p><i>RI.5.8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).</i></p> <p><i>RF.5.4. Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.</i></p> <p><i>W.5.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</i> <i>A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.</i> <i>B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</i> <i>C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).</i> <i>D. Use precise language and domain-specific vocabulary to inform about or explain the topic.</i> <i>E. Provide a conclusion related to the information of explanation presented.</i></p> <p><i>W.5.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</i></p> <p><i>W.5.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</i></p> <p><i>W.5.8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</i></p> <p><i>W.5.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</i> <i>B. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</i></p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF)</p> <p>All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>
--	--

District/School Primary and Supplementary Resources	
Primary Resource: Eureka Math (Unbound Ed - Module 2) Zearn.org	Supplementary Resources: Number Talks: Building Numerical Reasoning Sadlier Progress In Mathematics Online Resources - Grade 5 <i>Sadlier Progress in Mathematics</i> Workbook <i>Study Island</i> <i>Excel Math</i> (Publisher: AnsMar) Khan Academy Visual Patterns: Gr. K-12 Number Strings Common Core Progression Documents Performance Tasks are available for use from the following sites: Illustrative Mathematics Coherence Map Inside Mathematics Problems of the Month Grade 5 YouCubed Tasks
Suggested Tools & Representations:	Suggested Tasks for Use During Unit
<ul style="list-style-type: none"> <input type="checkbox"/> Area models (e.g., an array) <input type="checkbox"/> Number bond <input type="checkbox"/> Place value disks <input type="checkbox"/> Partial product (an algorithmic method that takes base ten decompositions of factors, makes products of all pairs, and adds all products together) <input type="checkbox"/> Partial quotient (an algorithmic method using successive approximation) 	<ul style="list-style-type: none"> 5.NBT.A.1 Which number is it? 5.NBT.A.1 Millions and Billions of People 5.NBT.A.2 Marta's Multiplication Error 5.NBT.A.2 Multiplying Decimals by 10 5.NBT.B.5 Elmer's Multiplication Error 5.OA.A.1 Using Operations and Parentheses 5.OA.A.1 Watch out for Parentheses 1 5.MD.A.1, 5.NF.B.3 Converting Fractions of a Unit into a Smaller Unit

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Sprints ● Self-assessment by students with guidance from teacher. ● Exit tickets ● Zearn teacher reports ● Star and Accelerated Math programs 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● <i>Sadlier</i> Unit Assessments ● <i>Eureka Math</i> Mid- and End- Module Assessments (Constructed response item with rubric) ● Teacher/District created benchmark assessments
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i> 	<ul style="list-style-type: none"> ● Conversion factor (the factor in a multiplication sentence that renames one measurement unit as another equivalent unit, e.g., $14 \times (1 \text{ in}) = 14 \times (1/12 \text{ ft})$; 1 in and 1/12 ft are the conversion factors.) ● Decimal Fraction (a proper fraction whose denominator is a power of 10) ● Multiplier (a quantity by which a given number—a multiplicand—is to be multiplied) ● Parentheses (the symbols used to relate order of operations)
Focus Mathematical Concepts	
<p><u>Grade Level Fluency Requirement:</u></p> <ul style="list-style-type: none"> ◆ 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm. <p><u>Prerequisite skills</u></p> <p><i>Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.</i></p> <p><u>Coherence Map</u></p> <p>4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- 4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- 4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- 4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 4.NBT.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Common Misconceptions:

- Students have restricted the definition and think fractions have to be less than 1, the numerator must always be smaller than the denominator.
- Students do not use benchmark numbers like 0, $\frac{1}{2}$, and 1 to check the reasonableness of an answer because they have restricted their understanding of fractions to part-whole situations and do not think of the fractions as numbers.
- Students have a limited number of models for interpreting fractions, such as part/whole with pieces rather than a division problem
- Students may switch the numerator and denominator when writing a division problem as a fraction
- Misapplies additive ideas when finding equivalent fractions, for example $\frac{3}{8} = \frac{4}{9}$ because $3 + 1 = 4$ and $8 + 1 = 9$.
- When students simplify a fraction, they do not always find the GCF and forget to check if the fraction can still be simplified.
- Students may label answers when finding volume as units squared instead of units cubed.
- Students may not make the connection between multiplying the area of the base of a figure by the height of the figure.
- When calculating the volume of two overlapping figures, student may incorrectly calculate or label the length, width or height of each individual figure.
- Students will forget to bring down zeros when multiplying by multi-digit numbers.

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Unit 3: Addition & Subtraction of Fractions (Approximate Instructional Time: 4.5 weeks)		
NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> 5.NF.A.1 Add and subtract fractions with unlike denominator (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 unlike denominators. $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{5}{12} = \frac{23}{12}$ (in general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$) 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concepts : Adding and subtracting fractions with unlike denominators Students will be able to: <ul style="list-style-type: none"> Add and subtract fractions with unlike units using the strategy of creating equivalent fractions. Add and subtract fractions from whole numbers using equivalence and the number line as strategies. Add and subtract fractions making like units numerically. Learning Goal 1: Develop conceptual understanding to add and subtract fractions using a variety of strategies.
<ul style="list-style-type: none"> 5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., 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. <i>For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.</i> 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): Adding and subtracting fractions with unlike denominators. Students are able to: <ul style="list-style-type: none"> use fraction benchmark numbers to assess reasonableness of addition and subtraction equations. explore part to whole relationships. add and subtract fractions, including mixed numbers, with unlike denominators to solve multi-step word problems. represent calculations and solutions with visual fraction models and equations estimate answers using benchmark fractions and explain whether the answer is reasonable. estimate answers by reasoning about the size of the fractions and explain whether the answer is reasonable. Learning Goal 2: Solve word problems involving adding or subtracting fractions with unlike denominators, and determine if the answer to the word problem

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

is reasonable, using estimations with benchmark fractions.

Interdisciplinary Connections:

[NGSS Appendix for Alignment](#)

Science:

5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: *Science examples: (1) If you split a salt grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end?*

(2) Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a whole number without using exponents. (5.NBT.A.1, 5.NF.B.7)

(3) Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1)

(4) Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)

5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: *Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)*

5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. *Science example: In a diagram showing matter flows in a system, assign values to the arrows in a diagram to show flows quantitatively.*

5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: *Science example: (1) The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other, aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)*

(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: *Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2)*
Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. *Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.*

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p>3–5-ETS1 <i>As part of this work, teachers should give students opportunities to use the four operations to solve problems:</i> <i>Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)</i></p> <p><u>English-Language Arts:</u></p> <p>RI.5.7. <i>Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</i></p> <p>RI.5.8. <i>Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).</i></p> <p>RF.5.4. <i>Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.</i></p> <p>W.5.2. <i>Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</i> <i>A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.</i> <i>B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</i> <i>C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).</i> <i>D. Use precise language and domain-specific vocabulary to inform about or explain the topic.</i> <i>E. Provide a conclusion related to the information of explanation presented.</i></p> <p>W.5.4. <i>Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</i></p> <p>W.5.5. <i>With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</i></p> <p>W.5.8. <i>Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</i></p> <p>W.5.9. <i>Draw evidence from literary or informational texts to support analysis, reflection, and research.</i> <i>B. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</i></p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

and collaborate and create and communicate knowledge.

8.2 Technology Education, Engineering, Design and Computational Thinking - Programming

([Word](#) | [PDF](#))

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Please see relevant projects for technology standards [8.1](#) and [8.2](#):

District/School Primary and Supplementary Resources	
Primary Resource: Eureka Math (Unbound Ed - Module 3) Zearn.org	Supplementary Resources: Number Talks: Building Numerical Reasoning Sadlier Progress In Mathematics Online Resources - Grade 5 <i>Sadlier Progress in Mathematics</i> Workbook <i>Study Island</i> <i>Excel Math</i> (Publisher: AnsMar) Khan Academy Visual Patterns: Gr. K-12 Number Strings Common Core Progression Documents Performance Tasks are available for use from the following sites: Illustrative Mathematics Coherence Map Inside Mathematics Problems of the Month Grade 5 YouCubed Tasks
Suggested Tools & Representations:	Suggested Tasks for Use During Unit
<ul style="list-style-type: none"> <input type="checkbox"/> Fraction strips <input type="checkbox"/> Number line (a variety of templates) <input type="checkbox"/> Paper strips (for modeling equivalence) <input type="checkbox"/> Rectangular fraction model Tape diagrams 	5.NF.A.1 Making S'Mores 5.NF.A.2 Do These Add Up? 5.NF.A Measuring Cups

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Sprints ● Self-assessment by students with guidance from teacher. ● Exit tickets ● Zearn teacher reports ● Star and Accelerated Math programs 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● <i>Sadlier</i> Unit Assessments ● <i>Eureka Math</i> Mid- and End- Module Assessments (Constructed response item with rubric) ● Teacher/District created benchmark assessments
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i> 	<ul style="list-style-type: none"> ● Benchmark fraction (e.g., 1/2 is a benchmark fraction when comparing 1/3 and 3/5) ● Like denominators (e.g., 1/8 and 5/8) ● Unlike denominators (e.g., 1/8 and 1/7)
Focus Mathematical Concepts	
<p><u>Grade Level Fluency Requirement:</u></p> <p style="padding-left: 40px;">◆ 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.</p> <p><u>Prerequisite skills</u></p> <p><i>Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.</i></p> <p><u>Coherence Map</u></p> <p>4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.</p> <p>4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.</p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:* $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.
- c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Common Misconceptions:

- When converting units of measure, students often forget when multiplication and division are to be used.
- When multiplying fractions, students may create common denominators before completing the multiplication.
- When dividing fractions, students often forget to use the reciprocal of the second fraction.
- When multiplying/dividing decimal numbers, students may not understand where the decimal point is placed in the product/quotient or may forget to put the decimal point in the product/quotient.
- When dividing decimal numbers, students often have difficulty using zeros in the quotient (for example: 4.12 4 may be written as 1.3 instead of 1.03).
- Students may not recognize the relationship between decimals and fractions. Using visual representations can help build the connection between equivalent decimals and fractions.

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Unit 4: Multiplication & Division of Fractions (Approximate Instructional Time: 8 weeks)		
NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> 5.MD.B.2. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Line plots of fraction measurements</p> <p>Students are able to:</p> <ul style="list-style-type: none"> use measurement information to create a line plot. using measurement information presented in line plots, add, subtract, multiply and divide fractions in order to solve problems. <p>Learning Goal 1: Make a line plot to display a data set in measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$) and use it to solve problems involving the four operations on fractions with unlike denominators.</p>
<ul style="list-style-type: none"> 5.NF.B.3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <i>For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get?</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Fractions represent division</p> <p>Students are able to:</p> <ul style="list-style-type: none"> represent a fraction <i>as a division statement</i> ($a/b = a \div b$). use tape diagrams to model fractions as division. solve word problems involving the division of whole numbers with answers in the form of fractions or whole numbers. <p>Learning Goal 2: <i>Interpret a fraction as a division</i> of the numerator by the denominator; solve word problems in which division of whole numbers leads to fractions or mixed numbers as solutions.</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<p><i>Between what two whole numbers does your answer lie?</i></p>		
<ul style="list-style-type: none"> ● 5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <ul style="list-style-type: none"> 5.NF.B.4a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. <i>For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)</i> 	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Multiplication of a whole number by a fraction.</p> <p>Students are able to:</p> <ul style="list-style-type: none"> ● relate <i>fractions as division</i> to <i>fraction of a set</i> ● multiply any whole number by a fraction using tape diagrams. ● find a fraction of a measurement, and solve word problems. ● solve and create fraction word problems involving addition, subtraction, and multiplication. ● for whole number or fraction q, represent $(a/b) \times q$ as a parts of a partition of q into b equal parts [e.g. using a visual fraction model, $(3/4) \times 5$ can be represented by 3 parts, after partitioning 5 objects into 4 equal parts]. ● for whole number or fraction q, represent $(a/b) \times q$ as $a \times q \div b$ [e.g. showing that $(2/5) \times 3$ is equivalent to $(2 \times 3) \div 5$]. ● from a story context, interpret $(a/b) \times q$ as a parts of a partition of q into b equal parts. <p>Learning Goal 3: Build the conceptual understanding that fractions are division problems.</p>
<p>5.NF.B.5. Interpret multiplication as scaling (resizing)</p> <ul style="list-style-type: none"> ● 5.NF.B.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. ● 5.NF.B.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 familiar case); explaining why multiplying a given number by a fraction less than 1 results in a 	<p>MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Interpret multiplication as resizing (scaling)</p> <p>Students are able to:</p> <ul style="list-style-type: none"> ● compare the size of a product to the size of one of its factors, considering the size of the other factor (at least one factor is a fraction). ● explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number. ● explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number. ● explain that multiplying a given number by a fraction equivalent to 1 does not change the product. <p>Learning Goal 4: Explain how a product is related to the magnitude(<i>size</i>) of the factors, including cases in which one factor is a</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<p>product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.</p>		<p>fraction greater than 1 and cases in which one factor is a fraction less than 1.</p>
<ul style="list-style-type: none"> 5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 	<p>MP.4 Model with mathematics. MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): Multiplication with fractions and decimals as scaling and word problems</p> <p>Students are able to:</p> <ul style="list-style-type: none"> solve word problems using fraction and decimal multiplication. represent the solution to these real world problems with visual fraction models and equations. <p>Learning Goal 5: Solve real-world problems involving multiplication of fractions (including mixed numbers), using visual fraction models or equations to represent the problem.</p>
<ul style="list-style-type: none"> 5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. 	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): Multiplication of a fraction by a fraction; division of fractions and decimal fractions</p> <p>Students are able to:</p> <ul style="list-style-type: none"> divide of a unit fraction by a whole number and represent with visual fraction models. divide of a whole number by a unit fraction and represent with visual fraction models. divide unit fractions by whole numbers to solve real-world problems, using visual fraction models and equations to represent the problem. divide whole numbers by unit fractions to solve real-world problems, using visual fraction models and equations to represent the problem. create story contexts for numerical expressions and tape diagrams, and solve word problems. <p>Learning Goal 6: Divide a unit fraction by a non-zero whole number and interpret by creating a story context or visual fraction model.</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<p>Learning Goal 7: Divide a whole number by a unit fraction and interpret by creating a story context or visual fraction model.</p> <p>Learning Goal 8: Solve real-world problems involving division of unit fractions by whole numbers or whole numbers by unit fractions.</p>
<ul style="list-style-type: none"> 5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *(benchmarked) 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Reinforce through other standards in unit.</p> <p>Students are able to:</p> <ul style="list-style-type: none"> relate decimal and fraction multiplication. solve word problems using tape diagrams and fraction by fraction multiplication. divide decimal dividends by non-unit decimal divisors <p>Learning Goal 9: Divide with decimals by connecting to fraction work.</p>
<ul style="list-style-type: none"> 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s): Convert measurements</p> <p>Students are able to:</p> <ul style="list-style-type: none"> convert measures involving whole numbers, and solve multi-step word problems. convert measures involving mixed unit measurements, and solve multi-step word problems. <p>Learning Goal 10: Solve measurement problems involving fractions.</p>
<ul style="list-style-type: none"> 5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): Interpretation of numerical expression</p> <p>Students are able to:</p> <ul style="list-style-type: none"> interpret and evaluate numerical expressions that include the language of scaling and fraction division. evaluate numerical expressions that include nested grouping

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<p>symbols (for example, $3 \times [5 + (7 - 3)]$).</p> <p><i>Standard supports other learning goals in this unit.</i></p>
<ul style="list-style-type: none"> 5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning</p>	<p>Concept(s): Interpretation of numerical expressions</p> <p>Students are able to:</p> <ul style="list-style-type: none"> write a simple numerical expression when given a verbal description. interpret the quantitative relationships in numerical expressions without evaluating (simplifying) the expression. <p><i>Standard supports other learning goals in this unit.</i></p>
<p><u>Interdisciplinary Connections:</u></p> <p><u>NGSS Appendix for Alignment</u></p>	<p><u>Science:</u></p> <p>5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: <i>Science examples: (1) If you split a salt grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end? (2) Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a whole number without using exponents. (5.NBT.A.1, 5.NF.B.7) (3) Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1) (4) Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)</i></p> <p>5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: <i>Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)</i></p> <p>5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. <i>Science example: In a diagram showing matter flows in a system, assign values to the arrows in a diagram to show flows quantitatively.</i></p> <p>5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: <i>Science example: (1)The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other,</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)
(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: *Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2)*
Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions.
Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.

3-5-ETS1 As part of this work, teachers should give students opportunities to use the four operations to solve problems:
Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)

English-Language Arts:

RI.5.7. *Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.*

RI.5.8. *Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).*

RF.5.4. *Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.*

W.5.2. *Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*
A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.
B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).
D. Use precise language and domain-specific vocabulary to inform about or explain the topic.
E. Provide a conclusion related to the information of explanation presented.

W.5.4. *Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)*

W.5.5. *With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.*

W.5.8. *Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.*

W.5.9. *Draw evidence from literary or informational texts to support analysis, reflection, and research.*
B. Apply grade 5 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]").

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<p>21st Century Skills/ Career Ready Practices:</p>	<p>CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>
<p>2014 NJ Technology Standards:</p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>

District/School Primary and Supplementary Resources	
<p>Primary Resource:</p> <p>Eureka Math (Unbound Ed - Module 4)</p> <p>Zearn.org</p>	<p>Supplementary Resources:</p> <p>Number Talks: Building Numerical Reasoning Sadlier Progress In Mathematics Online Resources - Grade 5 <i>Sadlier Progress in Mathematics</i> Workbook <i>Study Island</i> <i>Excel Math</i> (Publisher: AnsMar) Khan Academy Visual Patterns: Gr. K-12 Number Strings Common Core Progression Documents</p> <p>Performance Tasks are available for use from the following sites:</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	Illustrative Mathematics Coherence Map Inside Mathematics Problems of the Month Grade 5 YouCubed Tasks
Suggested Tools & Representations:	Suggested Tasks for Use During Unit
<input type="checkbox"/> <i>Area models</i> <input type="checkbox"/> <i>Number lines</i> <input type="checkbox"/> <i>Tape diagrams</i>	5.MD.A.1, 5.NF.B.3 Converting Fractions of a Unit into a Smaller Unit 5.MD.B.2 5.NF.A.1 Fractions on a Line Plot 5.NF.B.3 How Much Pie? 5.NF.B.4b Chavone's Bathroom Tiles 5.NF.B.4b New Park 5.NBT.B.7 The Value of Education
District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> • Teacher observation of students engaged in group and independent activities. • Individual and small group conferences/interviews to assess understanding with rubric • Sprints • Self-assessment by students with guidance from teacher. • Exit tickets • Zearn teacher reports • Star and Accelerated Math programs 	<ul style="list-style-type: none"> • Teacher created assessments and projects • Sadlier Unit Assessments • Eureka Math Mid- and End- Module Assessments (Constructed response item with rubric) • Teacher/District created benchmark assessments
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i>	<ul style="list-style-type: none"> • Decimal divisor (the number that divides the whole and has units of tenths, hundredths, thousandths, etc.) • Simplify (using the largest fractional unit possible to express an equivalent fraction)
Focus Mathematical Concepts	
<u>Grade Level Fluency Requirement:</u>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- ◆ **5.NBT.B.5** Fluently multiply multi-digit whole numbers using the standard algorithm.

Prerequisite skills

Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.

Coherence Map

- 4.NF.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- 4.NF.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
- 4.NF.3** Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
 - Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:* $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.
- 4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
 - Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*
 - Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*
- 4.NF.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (Students capable of generating equivalent fractions can generally develop strategies for adding fractions with unlike denominators. However, addition and subtraction with unlike denominators generally is not a requirement at this grade.) *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.*
- 4.NF.6** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

Common Misconceptions:

- When graphing an ordered pair, students may forget that the x-coordinate is first and the y-coordinate is second.
- A helpful phrase in having students remember the direction of the x-axis and y-axis is, *you must walk to the elevator before you can go up the elevator.*
- When given an equation, students have a difficult understanding that they could choose any value for x-coordinate to find the y-coordinate.
- Students often have a difficult time remembering that a square can be called a rectangle but a rectangle can not be called a square because a square has one more attribute the rectangle does not, four equal sides.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Students also often think that a rhombus has the same attributes as a square because of the four equal sides. They forget that a rhombus does not have four right interior angles.
- When using a line plot students often do not relate the x on the line plot with that number being used more than once (for example, $\frac{1}{2}$ may have 3 x's above it and the student may not understand it as a total of $1\frac{1}{2}$ but only as $\frac{1}{2}$).

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<i>Unit 5: Addition and Multiplication with Volume and Area</i> (Approximate Instructional Time: 5 weeks)		
NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> ● 5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. ● 5.MD.C.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units. 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): Concepts of volume <ul style="list-style-type: none"> ● <i>Solid figures which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.</i> ● <i>Volume of a solid can be determined using unit cubes of other dimensions.</i> Students are able to: <ul style="list-style-type: none"> ● count unit cubes in order to measure the volume of a solid. ● use unit cubes of centimeters, inches, and/or other units to measure volume. ● Explore volume by building and counting on unit cubes. ● Cubes with side length of 1 unit, called “a unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. Find the volume of a right rectangular prism by packing with cubic units and counting. ● Compose and decompose right rectangular prisms using layers. ● Find the total volume of solid figures composed of two non-overlapping rectangular prisms. <p style="text-align: center;">Learning Goal 1: Measure volume by counting the total number cubic units required to fill a figure without gaps or overlaps.</p>
<ul style="list-style-type: none"> ● 5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others.	Concept(s): Volume and the operations of multiplication and addition <ul style="list-style-type: none"> ● <i>Volume is additive: volumes of composite solids can be determined by adding the volumes of each solid.</i> Students are able to:

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p>MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<ul style="list-style-type: none"> ● pack right rectangular prisms with cubes to find volume and multiply side lengths of the right rectangular prism to find volume, showing that they are the same. ● pack right rectangular prisms with cubes to find volume and multiply height by the area of the base, showing that they are the same. ● explain how both volume formulas relate to counting the cubes in one layer and multiplying that value by the number of layers (height). ● write the volume of an object as the product of three whole numbers. ● solve real-world and mathematical problems using the formulas $V = l \times w \times h$ and $V = B \times h$. and whole number edge lengths. <p>Learning Goal 2: Show that the volume of a right rectangular prism found by counting all the unit cubes is the same as the formulas $V = l \times w \times h$ or $V = B \times h$.</p> <p>Learning Goal 3: Apply formulas to solve real world and mathematical problems involving volumes of right rectangular prisms that have whole number, including designing a sculpture using rectangular prisms within given parameters.</p>
<ul style="list-style-type: none"> ● 5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. 5.NF.B.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. 	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Area of rectangular figures with fractional side lengths</p> <p>Students are able to:</p> <ul style="list-style-type: none"> ● Find the area of rectangles with whole-by-mixed and whole-by-fractional number side lengths by tiling, record by drawing, and relate to fraction multiplication. ● tile a rectangle having fractional side lengths using unit squares of the appropriate unit fraction [e.g. given a $3 \frac{1}{4}$ inch x $7 \frac{3}{4}$ inch rectangle, tile the rectangle using $\frac{1}{4}$ inch tiles]. ● Find the area of rectangles with mixed-by-mixed and fraction-by-fraction side lengths by tiling, record by drawing, and relate to fraction multiplication. ● show that the area found by tiling with unit fraction tiles is the same as would be found by multiplying the side lengths.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<p>Learning Goal 4: Tile a rectangle with unit fraction squares to find the area and multiply side lengths to find the area of the rectangle, showing that the areas are the same.</p>
<ul style="list-style-type: none"> 5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 	<p>MP.4 Model with mathematics. MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): Area of rectangular figures with fractional side lengths</p> <p>Students are able to:</p> <ul style="list-style-type: none"> multiply mixed number factors, and relate to the distributive property and area model. <p>Learning Goal 5: Solve real world problems involving area of figures with fractional side lengths using visual models and/or equations.</p>
<ul style="list-style-type: none"> 5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. <i>For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</i> 5.G.B.4. Classify two-dimensional figures in a hierarchy based on properties. 	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): Drawing, analysis, and classification of two-dimensional shapes</p> <ul style="list-style-type: none"> <i>Attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.</i> <p>Students are able to:</p> <ul style="list-style-type: none"> Draw trapezoids, parallelograms, rectangles, rhombuses, kites and squares to clarify their attributes, and define the quadrilateral based on those attributes. Classify two-dimensional figures in a hierarchy based on properties. Draw and identify varied two-dimensional figures from given attributes. <p>Learning Goal 6: Classify two-dimensional figures in a hierarchy based on properties.</p>
<p><u>Interdisciplinary Connections:</u> NGSS Appendix for Alignment</p>	<p><u>Science:</u> 5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: <i>Science examples: (1) If you split a salt</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end?

(2) Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a whole number without using exponents. (5.NBT.A.1, 5.NF.B.7)

(3) Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1)

(4) Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)

5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)

5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In a diagram showing matter flows in a system, assign values to the arrows in a diagram to show flows quantitatively.

5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: Science example: (1) The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other, aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)

(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2) Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.

3-5-ETS1 As part of this work, teachers should give students opportunities to use the four operations to solve problems: Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)

English-Language Arts:

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p><i>RI.5.7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</i></p> <p><i>RI.5.8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).</i></p> <p><i>RF.5.4. Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.</i></p> <p><i>W.5.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</i></p> <p><i>A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.</i></p> <p><i>B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</i></p> <p><i>C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).</i></p> <p><i>D. Use precise language and domain-specific vocabulary to inform about or explain the topic.</i></p> <p><i>E. Provide a conclusion related to the information of explanation presented.</i></p> <p><i>W.5.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</i></p> <p><i>W.5.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</i></p> <p><i>W.5.8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</i></p> <p><i>W.5.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</i></p> <p><i>B. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</i></p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF)</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p>All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>
--	---

District/School Primary and Supplementary Resources	
---	--

<p>Primary Resource:</p> <p>Eureka Math (Unbound Ed - Module 5)</p> <p>Zearn.org</p>	<p>Supplementary Resources:</p> <p>Number Talks: Building Numerical Reasoning</p> <p>Sadlier Progress In Mathematics Online Resources - Grade 5</p> <p><i>Sadlier Progress in Mathematics</i> Workbook</p> <p><i>Study Island</i></p> <p><i>Excel Math</i> (Publisher: AnsMar)</p> <p>Khan Academy</p> <p>Visual Patterns: Gr. K-12</p> <p>Number Strings</p> <p>Common Core Progression Documents</p> <p>Performance Tasks are available for use from the following sites:</p> <p>Illustrative Mathematics</p> <p>Coherence Map</p> <p>Inside Mathematics Problems of the Month</p> <p>Grade 5 YouCubed Tasks</p>
---	--

Suggested Tools & Representations:	Suggested Tasks for Use During Unit
------------------------------------	-------------------------------------

<ul style="list-style-type: none"> <input type="checkbox"/> Area model <input type="checkbox"/> Centimeter cubes <input type="checkbox"/> Centimeter grid paper <input type="checkbox"/> Isometric dot paper <input type="checkbox"/> Patty paper (measuring 5.5 in. × 5.5 in.) <input type="checkbox"/> Protractor <input type="checkbox"/> Ruler <input type="checkbox"/> Set square or right angle template <input type="checkbox"/> Tape diagram 	<p>5.MD.C.5 Breaking Apart Composite Solids</p> <p>5.NF.B.4b Chavone's Bathroom Tiles</p> <p>5.NF.B.4b New Park</p> <p>5.NF.B.6 To Multiply or not to multiply?</p> <p>5.OA.B.3 Sidewalk Patterns</p> <p>5.G.B.3 Always, Sometimes, Never</p> <p>5.G.B.4 What is a Trapezoid? (Part 2)</p>
---	--

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Sprints ● Self-assessment by students with guidance from teacher. ● Exit tickets ● Zearn teacher reports ● Star and Accelerated Math programs 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● <i>Sadlier</i> Unit Assessments ● <i>Eureka Math</i> Mid- and End- Module Assessments (Constructed response item with rubric) ● Teacher/District created benchmark assessments
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i> 	<ul style="list-style-type: none"> ● Base (one face of a three-dimensional solid—often thought of as the surface on which the solid rests) ● Bisect (divide into two equal parts) ● Cubic units (cubes of the same size used for measuring volume) ● Height (adjacent layers of the base that form a rectangular prism) ● Hierarchy (series of ordered groupings of shapes) ● Unit cube (cube whose sides all measure 1 unit; cubes of the same size used for measuring volume) ● Volume of a solid (measurement of space or capacity)
Focus Mathematical Concepts	
<p><u>Grade Level Fluency Requirement:</u></p> <ul style="list-style-type: none"> ◆ 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm. <p><u>Prerequisite skills</u></p> <p><i>Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.</i></p> <p>Coherence Map</p> <p>3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.</p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.

b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a “one-degree angle,” and can be used to measure angles.

b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.

Recognize right triangles as a category, and identify right triangles.

5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)*

Common Misconceptions:

- When graphing an ordered pair, students may forget that the x-coordinate is first and the y-coordinate is second.
- A helpful phrase in having students remember the direction of the x-axis and y-axis is, *you must walk to the elevator before you can go up the elevator.*
- When given an equation, students have a difficult understanding that they could choose any value for x-coordinate to find the y-coordinate.
- Students often have a difficult time remembering that a square can be called a rectangle but a rectangle can not be called a square because a square has one more attribute the rectangle does not, four equal sides.
- Students also often think that a rhombus has the same attributes as a square because of the four equal sides. They forget that a rhombus does not have four right interior angles.
- When using a line plot students often do not relate the x on the line plot with that number being used more than once (for example, $1/2$ may have 3 x's above it and the student may not understand it as a total of $1 1/2$ but only as $1/2$).

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

Unit 6: Problem Solving with the Coordinate Plane (Approximate Instructional Time: 8 weeks)		
NJ Student Learning Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills <i>(Learning goals are for the Unit but may not necessarily be in sequential order.)</i>
<ul style="list-style-type: none"> ● 5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). ● 5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Drawing figures and problem solving in the coordinate plane</p> <ul style="list-style-type: none"> ● <i>Coordinate plane as perpendicular number lines.</i> ● <i>Perpendicular number lines (axes) define a coordinate system.</i> ● <i>Intersection of the lines (origin) coincides with the 0 on each number line.</i> ● <i>Given points in the plane is located using an ordered pair of numbers (coordinates).</i> ● <i>First numbers in an ordered pair indicates how far to travel from the origin in the direction of the x-axis.</i> ● <i>Second numbers in an ordered pair indicate how far to travel in the direction of the y-axis.</i> <p>Students are able to:</p> <ul style="list-style-type: none"> ● construct a coordinate system on both a line and a plane. ● name points using coordinate pairs, and use the coordinate pairs to plot points. ● investigate patterns in vertical and horizontal lines, and interpret points on the plane as distances from the axes. ● Generate a one and two number patterns from given rules, plot the points, and analyze the patterns. ● construct parallel and perpendicular line segments, and analyze the relationships of the coordinate pairs. ● draw symmetric figures using distance and angle measure from the line of symmetry. ● graph points defined by whole number coordinates in the first quadrant of the coordinate plane in order to represent real world and mathematical problems.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		<ul style="list-style-type: none"> ● interpret coordinates in context. ● plot data on line graphs and analyze trends. ● use the coordinate system to solve real world problems. <p>Learning Goal 1: Represent real world and mathematical problems by graphing points defined by whole number coordinates in the <i>first quadrant</i> of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p>
<ul style="list-style-type: none"> ● 5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning</p>	<p>Concept(s): Reinforce standard through work with 5.OA.B.3</p>
<ul style="list-style-type: none"> ● 5.OA.B.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i> 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Patterns in the coordinate plane and graphing number patterns from rules</p> <p>Students are able to:</p> <ul style="list-style-type: none"> ● compare the lines on a coordinate plane and patterns generated by addition and multiplication rules. ● analyze number patterns created from mixed operations. ● create a rule to generate a number pattern, and plot the points. ● use two rules to create two numerical patterns. ● compare corresponding terms (e.g. compare the first terms in each list, compare the second terms in each list, etc). ● identify the relationship between corresponding terms and write ordered pairs. ● graph the ordered pairs. <p>Learning Goal 2: Generate two numerical patterns from two given rules, identify the relationship between corresponding terms,</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

		create ordered pairs and graph the ordered pairs.
<ul style="list-style-type: none"> 5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., 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. <i>For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Multi-step word problems</p> <p>Students are able to:</p> <ul style="list-style-type: none"> add and subtract fractions, including mixed numbers, with unlike denominators to solve word problems. represent calculations and solutions with visual fraction models and equations estimate answers using benchmark fractions and explain whether the answer is reasonable. estimate answers by reasoning about the size of the fractions and explain whether the answer is reasonable. <p>Learning Goal 3: Make sense of complex multi-step problems and persevere in solving them. Share and critique peer solutions.</p>
<ul style="list-style-type: none"> 5.NF.B.3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <i>For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Reinforce through Learning Goal 3</p> <p>Students are able to:</p> <ul style="list-style-type: none"> represent a fraction as a division statement ($a/b = a \div b$). divide whole numbers in order to solve real world problems, representing the quotient as a fraction or a mixed number. represent word problems involving division of whole numbers using visual fraction models and equations.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<ul style="list-style-type: none"> 5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 	<p>MP.4 Model with mathematics.</p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): <i>Reinforce through Learning Goal 3</i></p> <p>Students are able to:</p> <ul style="list-style-type: none"> multiply fractions and mixed numbers in order to solve real world problems. represent the solution to these real world problems with visual fraction models and equations.
<ul style="list-style-type: none"> 5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. *(benchmarked) <p>5.NF.B.7c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?</i></p>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): <i>Reinforce through Learning Goal 3</i></p> <p>Students are able to:</p> <ul style="list-style-type: none"> use a story context to interpret division of a unit fraction by a whole number. divide of a unit fraction by a whole number and represent with visual fraction models. use a story context to interpret division of a whole number by a unit fraction. divide of a whole number by a unit fraction and represent with visual fraction models. divide unit fractions by whole numbers to solve real-world problems, using visual fraction models and equations to represent the problem. divide whole numbers by unit fractions to solve real-world problems, using visual fraction models and equations to represent the problem.
<ul style="list-style-type: none"> 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s): <i>Reinforce through Learning Goal 3</i></p> <p>Students are able to:</p> <ul style="list-style-type: none"> convert from one measurement unit to another within a given measurement system (e.g., convert 5 cm to 0.05 m, convert minutes to hours). solve multi-step, real world problems that require conversions.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

<ul style="list-style-type: none"> 5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<ul style="list-style-type: none"> Concept(s): <i>Reinforce through Learning Goal 3</i> <p>Students are able to:</p> <ul style="list-style-type: none"> pack right rectangular prisms with cubes to find volume and multiply side lengths of the right rectangular prism to find volume, showing that they are the same. pack right rectangular prisms with cubes to find volume and multiply height by the area of the base, showing that they are the same. explain how both volume formulas relate to counting the cubes in one layer and multiplying that value by the number of layers (height). write the volume of an object as the product of three whole numbers. solve real-world and mathematical problems using the formulas $V = l \times w \times h$ and $V = B \times h$. find the volume of a composite solid composed of two right rectangular prisms.
<p><u>Interdisciplinary Connections:</u></p> <p>NGSS Appendix for Alignment</p>	<p><u>Science:</u></p> <p>5-PS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and division, convert measurement units, and work with volume: <i>Science examples: (1) If you split a salt grain with weight 1 mg into 10 equal parts, find the weight of each part. (Answer in mg.) If you next divide each of the parts into 10 equal parts, find the weight of one of the new parts. (Answer in mg.) How many parts are there in the end? (2) Suppose a salt grain with weight 1 mg is split into 10 equal parts, and each of those parts is split into 10 equal parts, and so on, until there are 10^8 parts. What is the weight of one of these tiny parts? Write the number of these tiny parts as a whole number without using exponents. (5.NBT.A.1, 5.NF.B.7) (3) Science example: When 100 g of sugar is dissolved in 0.5 kg of water, what is the total weight of the system? Answer in grams, then answer again in kilograms. After the water evaporates, see how much the sugar residue weighs. (5.MD.A.1) (4) Science example: Compress the air in a cylinder to half its volume. (Draw a picture of the volume before and after, and explain how you know that the new volume is half of the old volume.) Can you compress the volume by half again? Why is it difficult to do? Alignment limits: (1) Ratios are not expected until grade 6. (2) Scientific notation is not expected until grade 8. (5.MD.C.3-4)</i></p> <p>5-LS1 As part of this work, teachers should give students opportunities to convert measurement units: <i>Science example: In an experiment to rule out soil as a source of plant food, Sue weighed the soil using units of grams but Katya weighed the plant using units of kilograms. The soil lost 4 grams, while the plant gained 0.1 kilograms. Did the plant gain much more than the soil lost? Much less? About the same? (A good way to begin is to express both figures in grams.) Alignment notes: (1) Converting</i></p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

between measurement systems (e.g., centimeters to inches) is not expected until Grade 6. (2) Rate quantities, such as annual rates of ecosystem production, etc., are not expected until Grade 6. (3) Grade 5 students are expected to read, write, and compare decimals to thousandths, and perform decimal arithmetic to hundredths. (5.MD.A.1)

5-LS2 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In a diagram showing matter flows in a system, assign values to the arrows in a diagram to show flows quantitatively.

5-ESS1 As part of this work, teachers should give students opportunities to relate very large and very small quantities to place value and use the coordinate plane: Science example: (1) The sun is about 1011 meters from Earth. Sirius, another star, is about 1017 meters from Earth. Write these two numbers without exponents; position the numbers one directly below the other, aligning on the 1. How many times farther away from Earth is Sirius compared to the sun? (5.NBT.A.1)

(2) Over the course of a year, students compile data for the length of the day over the course of the year. What pattern is observed when the data are graphed on a coordinate plane, and how can a model of the sun and Earth explain the pattern? (2) Students are given (x, y) coordinates for the Earth at six equally spaced times during its orbit around the sun (with the sun at the origin). Students graph the points to show snapshots of Earth's motion through space. Alignment note: Scientific notation is not expected until grade 8. (5.G.A.2)

5-ESS2 As part of this work, teachers should give students opportunities to use the coordinate plane: Science example: Plot monthly data for high and low temperatures in two locations, one coastal and one inland (e.g., San Francisco County vs. Sacramento). What patterns do you see? How can the influence of the ocean be seen in the observed patterns? (5.G.A.2) Alignment notes: (1) Percentages are not expected until Grade 6. (2) Trends in scatterplots and patterns of association in two-way tables are not expected until Grade 8.

5-ESS3 As part of this work, teachers should give students opportunities to be quantitative in giving descriptions. Science example: In describing ways individual communities use science ideas to protect Earth's resources and environment, provide quantitative information such as amount of energy saved and the cost of the approach.

3–5-ETS1 As part of this work, teachers should give students opportunities to use the four operations to solve problems: Science example: Analyze constraints on materials, time, or cost to draw implications for design solutions. For example, if a design calls for 20 screws and screws are sold in boxes of 150, then how many copies of the design could be made? (5.OA)

English-Language Arts:

RI.5.7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

RI.5.8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).

RF.5.4. Read with sufficient accuracy and fluency to support comprehension. A. Read grade-level text with purpose and understanding.

W.5.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

A. Introduce a topic clearly to provide a focus and group related information logically; include text features such as headings, illustrations, and multimedia when useful to aiding comprehension.

B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

C. Link ideas within paragraphs and sections of information using words, phrases, and clauses (e.g., in contrast, especially).

D. Use precise language and domain-specific vocabulary to inform about or explain the topic.

E. Provide a conclusion related to the information of explanation presented.

W.5.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

	<p><i>W.5.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</i></p> <p><i>W.5.8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</i></p> <p><i>W.5.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</i></p> <p><i>B. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</i></p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Primary and Supplementary Resources	
<p>Primary Resource:</p> <p><u>Eureka Math (Unbound Ed - Module 6)</u></p> <p>Zearn.org</p>	<p>Supplementary Resources:</p> <p><u>Number Talks: Building Numerical Reasoning</u></p> <p><u>Sadlier Progress In Mathematics Online Resources - Grade 5</u></p> <p><i>Sadlier Progress in Mathematics</i> Workbook</p> <p><i>Study Island</i></p> <p><i>Excel Math</i> (Publisher: AnsMar)</p> <p>Khan Academy</p> <p><u>Visual Patterns: Gr. K-12</u></p> <p><u>Number Strings</u></p> <p><u>Common Core Progression Documents</u></p> <p>Performance Tasks are available for use from the following sites:</p> <p><u>Illustrative Mathematics</u></p> <p><u>Coherence Map</u></p> <p><u>Inside Mathematics Problems of the Month</u></p> <p><u>Grade 5 YouCubed Tasks</u></p>
Suggested Tools & Representations:	Suggested Tasks for Use During Unit
<ul style="list-style-type: none"> <input type="checkbox"/> Ruler <input type="checkbox"/> Protractor <input type="checkbox"/> Set square <input type="checkbox"/> Tape diagrams 	<p><u>5.G.A.1 Battle Ship Using Grid Paper</u></p> <p><u>5.G.A.2 Meerkat Coordinate Plane Task</u></p> <p><u>5.NF.A.2 Do These Add Up?</u></p> <p><u>5.NF.A Measuring Cups</u></p> <p><u>5.NF.B.3 How Much Pie?</u></p> <p><u>5.NF.B.6 To Multiply or not to multiply?</u></p> <p><u>5.NF.B.7c Salad Dressing</u></p> <p><u>5.MD.A.1, 5.NF.B.3 Converting Fractions of a Unit into a Smaller Unit</u></p> <p><u>5.MD.C.5 Breaking Apart Composite Solids</u></p>

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

District/School Formative Assessment Plan	District/School Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Sprints ● Self-assessment by students with guidance from teacher. ● Exit tickets ● Zearn teacher reports ● Star and Accelerated Math programs 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● <i>Sadlier</i> Unit Assessments ● <i>Eureka Math</i> Mid- and End- Module Assessments (Constructed response item with rubric) ● Teacher/District created benchmark assessments ● Mammoth Math Gr. 5 End of Year Procedural Assessment ● Mammoth Math Gr. 5 End of Year Procedural Assessment Answer Key
Instructional Best Practices and Exemplars	Mathematical Terms/Vocabulary
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Math Work Stations</i> <input type="checkbox"/> <i>Use Communicators/manipulatives</i> <input type="checkbox"/> <i>Number talks</i> <input type="checkbox"/> <i>Hands-on activities</i> <input type="checkbox"/> <i>Exploratory activities</i> <input type="checkbox"/> <i>Games/play</i> <input type="checkbox"/> <i>Using concrete materials to advance conceptual understanding</i> <input type="checkbox"/> <i>Use drawings and diagrams to advance conceptual understanding</i> <input type="checkbox"/> <i>Connect current concepts to previously learned skills</i> 	<ul style="list-style-type: none"> ● Axis (fixed reference line for the measurement of coordinates) ● Coordinate (number that identifies a point on a plane) ● Coordinate pair (two numbers that are used to identify a point on a plane; written (x ,y) where x represents a distance from 0 on the x-axis and y represents a distance from 0 on the y-axis) ● Coordinate plane (plane spanned by the x-axis and y-axis in which the coordinates of a point are distances from the two perpendicular axes) ● Ordered pair (two quantities written in a given fixed order, usually written as (x , y)) ● Origin (fixed point from which coordinates are measured; the point at which the x-axis and y-axis intersect, labeled (0, 0) on the coordinate plane) ● Quadrant (any of the four equal areas created by dividing a plane by an x-axis and y-axis)
Focus Mathematical Concepts	
<p><u>Grade Level Fluency Requirement:</u></p> <ul style="list-style-type: none"> ◆ 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm. <p><u>Prerequisite skills</u></p> <p><i>Refer to Achieve the Core Coherence Map for full detail on vertical and horizontal alignment to prerequisite skills & future skills.</i></p> <p><u>Coherence Map</u></p> <p>4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</p>	

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a “one-degree angle,” and can be used to measure angles.

b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., 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. *For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.*

5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.7c Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

c. Solve real world problems involving division of a unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?*

5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

Common Misconceptions:

- When graphing an ordered pair, students may forget that the x-coordinate is first and the y-coordinate is second.
- A helpful phrase in having students remember the direction of the x-axis and y-axis is, *you must walk to the elevator before you can go up the elevator.*
- When given an equation, students have a difficult understanding that they could choose any value for x-coordinate to find the y-coordinate.
- Students often have a difficult time remembering that a square can be called a rectangle but a rectangle can not be called a square because a square has one more attribute the rectangle does not, four equal sides.
- Students also often think that a rhombus has the same attributes as a square because of the four equal sides. They forget that a rhombus does not have four right interior angles.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- When using a line plot students often do not relate the x on the line plot with that number being used more than once (for example, $\frac{1}{2}$ may have 3 x's above it and the student may not understand it as a total of $1\frac{1}{2}$ but only as $\frac{1}{2}$.

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.

Green Township School District Grade 5 Mathematics Curriculum - Revised 2017

- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.