Slate Valley
Multi-Tiered System of Supports-Math
Response to Instruction and Intervention
(MTSS-RtII)
Guide

The original document was developed over a two year period by the ARSU MTSS-RtII Task Force and adopted by the ARSU Board on September 24, 2014, based upon intensive reading and research, participation in the VT MTSS BEST Institute, the incorporation of work completed by curriculum task forces and the assessment task force, as well as input and contributions by many teacher leaders and administrators throughout the district in collaboration with task force members. This revised MTSS-RtII Math Guide was adopted: July 15, 2019.

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It is helpful to think of a Multi-Tiered System of Support-Response to Intervention and Instruction (MTSS-RtII) as a comprehensive, systemic approach to teaching and learning designed to improve learning for all students through increasingly differentiated and intensified assessment, instruction and intervention, provided by qualified professionals with appropriate expertise. Our District Mission, Vision and Shared Understandings speak to the very heart of a comprehensive systemic approach to teaching and learning.

**Student Learning Achieved Through Engagement**

**District Mission:** We are dedicated to the academic excellence of every student by empowering them with the means for the successful completion of district, state, and national educational standards and by challenging them to be productive members of society. We are committed to a comprehensive system of support to assure this outcome with the belief that failure is not an option.

**District Vision:** All students are engaged in rigorous, authentic, experiential, individualized learning that is supported or accelerated to ensure that they meet or exceed standards.

**Our Students** are curious and creative learners who succeed through personal initiative and sustained effort to reach high academic goals. They are critical thinkers and learners who seek knowledge and possess technological competence and collaborative skills. Our students embrace diversity and culture, act responsibly, and contribute to our community.

**Our Educators** believe in providing for the social, emotional, and academic needs of every child so that they feel connected, safe, and respected. They are committed in offering a challenging and engaging atmosphere in which all members of the school community can learn and grow.

**Our Families and Community** are integral to the success of our students and schools. Families are active, engaged, and welcomed partners in their child’s education. Our community is passionate about equitable educational outcomes for all students.

**Our Schools** offer an enriched learning environment and a comprehensive system of supports to address the needs of the whole child.
This Slate Valley intervention guide was developed after extensive research and with the Vermont’s Guiding Principles for MTSS-RtII in mind:

**Vermont’s Guiding Principles for MTSS-RtII**

**Principle #1:** Success begins with committed educators who believe that all students learn and can achieve high standards as a result of effective teaching.

**Principle #2:** A successful **multi-tiered system** begins with the highest quality classroom instruction that is informed by research and supported by a standards-based curriculum.

**Principle #3:** A coherent, articulated and **balanced assessment system** guides responsive teaching, informs educators and students about progress, and leads to effective decisions.

**Principle #4:** The analysis and use of on-going performance data to monitor progress, inform instructional decisions and refine ambitious goal setting results in acceleration of student learning.

**Principle #5:** Student success occurs when expert personnel provide targeted and **differentiated instruction** at the earliest indication of student need at a level of intensity that is responsive to the need.

**Principle #6:** To address the full range of students’ needs, schools provide a comprehensive, responsive system of instruction and intervention that reflects **fidelity** to the **research-based approach** while supporting teachers as they use keen observation to make decisions about and engage in responsive teaching.

**Principle #7:** Dynamic, positive and productive **collaboration** among students, families, and professionals with relevant expertise is the foundation for effective problem solving and instructional decision-making within a multi-tiered system.

**Principle #8:** Effective leadership, including building administrator engagement and **distributed leadership**, is crucial for guiding and sustaining a multi-tiered system.

**Principle #9:** The success of a **multi-tiered system** is dependent on continuously-developing expertise. Professional development for all members of the school community is needed to build capacity and sustain progress.

**Principle #10:** These principles are interrelated and will be most effective when integrated within a coherent plan for continuous improvement that recognizes how recursive assessment, reflection, and adaptation are needed to improve instruction and increase student achievement.
Slate Valley has adopted the following research-based practices for providing a comprehensive, systemic approach to teaching and learning designed to improve learning for all students through increasingly differentiated and intensified assessment, instruction and intervention.

**Comprehensive and Balanced Assessment Plan**

**Screening** data of academic and/or behavioral achievement is typically collected two to three times per year on all students. Data collected for screening purposes needs to be analyzed to determine whether each student is (or is likely) to meet, exceed or not meet benchmarks. Screening data should identify students who are really at risk and need a closer look.

**Progress Monitoring/Summative Assessment** data are critical to decision making about the provision of instruction and intervention at all levels of a multi-tiered system. This data helps teachers provide responsive instruction and intervention and are used to decide whether or not planned instruction and interventions are working.

**Diagnostic Measures** are designed to probe student learning at a deeper diagnostic level. This data will help identify areas of weakness that require intervention and provide a more diagnostic approach to designing, implementing and evaluating instruction and intervention.

**Student-Centered Learning**

Individuals bring a huge variety of skills, needs, and interests to learning. Neuroscience reveals that these differences are as varied and unique as our DNA or fingerprints. Our district is committed to creating learning opportunities for students that increasingly place the student in the driver’s seat of his or her education. To that end, we support the following practices: Personalized Learning, Flexible Pathways, Proficiency-Based Learning, and Differentiation.

**Personalized Learning** provides teachers and school systems an opportunity for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs. Students take an active role in designing their learning based on strengths, interests, and individual goals. This may include, particularly at the high school level, programs classified by the Agency of Education as Flexible Pathways.

**Flexible Pathways** legislation recognizes that not only should classroom instruction and school offerings be varied, but that some students may wish to learn outside the walls of our schools. This learning could take the form of internships, online or in person college courses, work-based learning, and more.

**Proficiency-Based Learning** is a student-centered, learning-centered approach to curriculum, instruction, and assessment in the classroom. Instead of students competing with each other for class rank, they challenge themselves to perform better against a set standard. Instead of focusing on task completion and earning a grade, students focus on learning. Instead of arbitrary timelines, students are given multiple opportunities to show what they know. Instead of all types of tasks and all categories of learning being averaged together, progress is clearly reported in smaller learning chunks. Students are given quality instruction, clear communication of the learning targets, and multiple, varied opportunities to practice in order to achieve proficiency.
Differentiation is a pedagogical practice wherein there is intentional variety in how ideas are presented, how students work with those ideas, and how students are assessed on their understanding of those ideas. Teachers can differentiate content, process, and product according to student readiness, interest, and learning profile while maintaining the integrity of the learning target.

Universal Design for Learning

Universal Design for Learning (UDL) is a set of principles for curriculum development that give all individuals equal opportunities to learn. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs. Individuals bring a huge variety of skills, needs, and interests to learning. Neuroscience reveals that these differences are as varied and unique as our DNA or fingerprints. Three primary brain networks come into play:

<table>
<thead>
<tr>
<th>Recognition Networks</th>
<th>Strategic Networks</th>
<th>Affective Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>The &quot;what&quot; of learning</td>
<td>The &quot;how&quot; of learning</td>
<td>The &quot;why&quot; of learning</td>
</tr>
<tr>
<td>What we gather facts and categorize what we see, hear, &amp; read. Identifying letters, words, or an author's style are recognition tasks.</td>
<td>Planning &amp; performing tasks. How we organize &amp; express our ideas. Writing an essay or solving a math problem are strategic tasks.</td>
<td>Why learners are engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.</td>
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</tbody>
</table>

APA Citation: CAST (2011). Universal Design for Learning Guidelines version 2.0. Wakefield, MA. Author CAST

Tiers of Instruction and Intervention must be delivered with fidelity, which can be defined as the adherence to specified guidelines and standards for a designated research based instructional practice, intervention and/or program. It is adhering to the quantity, frequency and duration as stated in the conventions or protocol. It also encompasses quality of delivery. Fidelity should heighten the instructor’s awareness of the diversity of student’s needs and should then lead to appropriate differentiation. Differentiation should be student-centered and based on data. Differentiation can include providing students with multiple means for representing information (i.e. print, audio, and visual modes), multiple means of expression (i.e. written, oral, arts, multimedia), and/or multiple means of engagement (optimizing individual choice and autonomy, relevance, value and authenticity and minimizing threats and distractions).
Tier 1 is effective, proficiency-based instruction that occurs in the general education classroom delivered by a highly qualified, skilled general education teacher. Commonly referred to as “core instruction,” it is focused on meeting the needs of all students. To ensure positive outcomes for all, the teacher uses evidence-based instructional strategies to differentiate and personalize instruction to meet the needs of all learners. Core instruction should include rigorous whole class, small group and individual student work that is informed by assessment data appropriate for the grade and the Common Core State Standards (CCSS).

Tier 2 support is designed specifically for those students who are not making adequate progress in Tier 1, or who are at risk for academic difficulties. Tier 2 instruction / intervention is an additional instructional support added to classroom instruction that focuses on a specific area of diagnosed need. That instruction could happen with multiple students in a small group by the classroom teacher or other qualified specialist. The duration of the intervention in the second tier should be flexible, temporary, and based on ongoing assessment of progress. The purpose of tier 2 intervention is to supplement -- not supplant -- tier 1 instruction.

Tier 3 Supports are intended for students who are not making sufficient progress given high-quality instruction in Tiers 1 and 2. Tier 3 interventions are individualized and customized for a very small number of students in a smaller group format and may be delivered with greater frequency and duration than Tier 2. Students in Tier 3 may continue to receive core instruction at Tier 1, focused on appropriate CCSS. However, for some students some portions of Tier 3 may supplant (replace) tier 1 classroom instruction. Interventions at Tier 3 are tailored to the student’s needs and provided by a highly trained, knowledgeable and skilled educator. In some schools, Tier 3 will be an indication of special education placement; in others it may also precede special education.

**Math Curriculum Expectations**
Universal Screening of All Learners: Northwest Evaluation Association - Measures of Academic Progress (MAPS)

Tier 1 Core Program Instruction
- Differentiated Instruction - p.11 and 13
- Engage New York-Eureka Math
- Zearn Math
- Math Curriculum Expectations
- Number Corner

Assessment data determines the need for Tier 2 Intervention

Tier 2 Supplemental Programs
- Do The Math
- Do The Math Now
- Math 180

Assessment data determines need for Tier 3 Intervention

Tier 3- Intensive Program
- Individualized based upon student needs using research-based practices in math fluency and problem-solving.

Some students will need Tier 2 Intervention in addition to effective Tier 1 instruction to meet grade level standards.

Few students will require Tier 3 intensive programming.

Slate Valley’s Pyramid Response to Instruction and Intervention in Math
Kindergarten Overview for Tier 1 MTSS Math Document

include some symbolic language and letters
journals-- representing, reflecting, and drawing inferences (conclusions based on data)
multiplication
addend
reference vocabulary within document
fluency- think in terms of pictures very fast & graphical representation
fluency in 1st grade- numerical

Counting and Cardinality:
There are all sorts of practical reasons for counting in the day of a Kindergarten student, including how many students are in attendance, how many are having hot lunch, how many cloudy days, and the list goes on. Teachers in the SVU incorporate counting and cardinality into their daily Morning Meetings when teachers engage students in a variety of counting activities, both forward and backward, as well as collecting data about their students or a recent science investigation that is organized on a graph. Students are invited to make observations about the data and bring meaning to these numbers. Such observations naturally lead to comparing the data(numbers) represented. Comparisons between two groups are limited to ten and include pictorial representations and numerals. Counting and cardinality provide the foundation upon which Operating with numbers ensures.

Operations and Number Base Ten:
Grouping -fiveness but 10 frame
Put Together/Take Apart situations (composing and decomposing) is an important role in Kindergarten as students explore the various compositions that make each number. Their experiences with composing and decomposing using a variety of concrete and pictorial models, including the number bond, also establish the relationship between addition and subtraction. Students are then ready to engage in problem solving by representing the problem pictorially and eventually with a equation (number sentence). Simple problems will require them to Add To with Result Unknown; Take From with Result Unknown; and Put Together/Take Apart with Total Unknown; as well as the challenge of Both Addends Unknown. Students at this age are expected to work successfully with
small numbers within 5; however, they will also be working with numbers within 10. At this level and that of Grades 1 and 2, “total” and addend” are sufficient academic vocabulary to use and be used by the students. Students also explore the “teens,” numbers 11-19 to build the foundation for place value. Children count and represent teen numbers using number bonds and 5- and 1-frames, with an eventual move to the use of bundling and place value cards. They make use of the East Asian way of counting and reading these ten numbers, for example, eleven and read as ten one, twelve as ten two, up through nineteen as ten nine. This, too, helps students to understand the place and value of ten.

**Measurement & Data:**
Measurement is the process of assigning a number of magnitude to some attribute shared by a class of objects. In Kindergarten length is central to mathematics, science, and daily life activities. Before measuring attributes, children in Kindergarten first recognize attributes and distinguish them from one another. Length is a core concept in Kindergarten for several reasons, in particular, the fact that it is a basic geometric measurement as well as length’s involvement in computing perimeter and area. Students use measurable attributes, such as length, weight(mass), and volume) to solve problems by comparing and ordering objects (be it two students’ heights, two containers of rice, or the mass of two pumpkins. They can compare the lengths of two objects both directly (by comparing them with each other) and indirectly by comparing two objects with a third (transitivity), and order several objects according to length.

**Geometry:**
Children interpret and their physical world with geometric ideas (shape, orientation, and spatial relations) and describe it with the corresponding vocabulary. They identify, name, and describe a variety of 2-dimensional shapes including squares, triangles, circles, rectangles, (regular) hexagons, and (isosceles) trapezoids presented in a variety of ways. They also explore the attributes and properties of three-dimensional solids including spheres, cubes, and cylinders. The use of these shapes and solids to build their spatial reasoning and they model the objects in their environment and go on to construct more complex shapes.

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<tr>
<th>Grade</th>
<th>Assessment Plan</th>
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</table>
Progress Monitoring/Summative: Measures of Academic Progress®
MAPS – Primary Grades (Winter and Spring)

Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)

- can correctly count the sequence 0-10. Students (I) can write some numbers 0-10.

**K2. Count to tell the number of objects. (K.CC.5)** Students (I) can correctly count to tell the number of objects. Sometimes students (I) can represent that number of objects with a numeral. Students (I) can explain my thinking but it may be unclear.

**K3. Compare numbers. (K.CC.6)** Students (I) can compare numbers by identifying whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group or Students (I) can compare two numbers between 1 and 10 presented as written numerals.

**K4. Work with numbers 11-19 to gain foundations for place value. (K.NBT.1)** Students (I) work with numbers 11-19 to gain foundations for place value.

**K.1. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. (K.OA.A)** Students (I) understand that addition is putting together and adding to and that subtraction is taking apart and taking from.
### k.1 Identify and describe shapes. (KG.1)
Students (I) can identify and describe objects in the environment using names of shapes, and the words above, below, beside, in front, behind.

### k.2 Analyze, compare, create, and compose shapes (KG.2)
Students (I) can analyze, compare and create 2D and 3D shapes in different sizes and orientations. Students (I) can describe their similarities, differences, and attributes.

### K.1 Describe and compare measurable attributes. (K.MD.A)
Students (I) can describe and compare measurable attributes of a group of objects.

### K.2 Classify objects and count the number of objects in each category. (K.MD.B)
Students (I) can classify objects into given categories and count the number of objects in each category.

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**Grade One Overview for MTSS Tier 1 Mathematics**

**Operations and Algebraic Thinking:**
First Grade students take on the challenging language of comparisons. Simple problems involving comparison require students to read closely and use drawings to interpret the language structure of the word problem. These drawings help them write the equation. Comparing sentences can take an active, equalizing, or counterfactual form, for example, “How many more applies does Ben need to have as many as Jake?” They can also be stated in a more factual way, “If there are 8 trucks and 5 drivers, how many trucks do not
have a driver?” Teachers will provide extensive experience with a variety of contexts to master the linguistic and situational complexity of the problems. Students will also represent ‘compare” problems in different ways and often favor the equation of missing addend which aligns with the bar(tape) model. Students will also gain experience with more ‘algebraic” subtypes of problems in which a “situation” equation does not immediately lead to an answer, for example, a Take From problem with Change Unknown.

Compare problems and Start Unknown problems can be extremely challenging in Grade 1 so mastery is not expected until Grade 2. Learning and using Level 2 strategies for solving problems involve counting on where students see the first addend as a part of the total. Learning to think of subtraction as unknown addend problems makes subtraction as easy as addition. “Making Ten” is a Level 3 strategy and allows students to decompose a larger number, for example 8 into 4 + 4 so it can be easily added to 6, thus making a ten when adding 6 + 4 and then 14 when adding the remaining 4. Students will make use of these strategies as well as tape diagrams, number bond diagrams, and number bonds to solve comparison problems. Much of the work at this grade level employs MP 1 where proficient first grade students can explain correspondences between equations, verbal descriptions, tables, and graphs.

Operations and Number Base Ten:
Students will learn to view ten ones as a unit called a ten. The ability to compose and decompose this unit flexibly and think of numbers 11-19 as composed of one ten and some ones will help immeasurably with the general methods for addition and subtraction. The number words still require attention as they are irregular. First graders some to understand twenty as two tens, forty as four tens, fourteen as one ten and four ones, etc. Students will also use their base-ten work to help them recognize the magnitude of numbers based on the ten’s place, and will use this understanding to compare two two-digit numbers. Students will use concrete models and drawings to understand the procedure for adding and subtracting. Computing differences is limited to multiples of ten.

Measurement & Data:
Students will have ample opportunity to make comparison regarding the length of multiple objects, directly and indirectly. Ordering a set of objects by length (six or more objects that differ slightly) will require a systematic strategy which will develop over time with teacher coaching. Measuring length requires tools and a defined unit measure, and students will learn that accurate measures of length require laying the unit end to end (in this case centimeter or inch manipulatives). It is essential that first graders learn that objects used as basic units of measurement must be the same size. Teachers in the SVU recognize that introducing non-standard units of measure may interfere with actual understanding so they have elected to use standard units of measure first. Teachers are invited to blend measurement with their studies of Number and Algebraic Thinking as such measurement activities support the idea of magnitude as well as reasoning and logic.
As for measurements of data, there is no single correct way to represent categorical data and the Core Standards do not require Grade 1 students to make use of any particular format. However, students in SVU will become familiar with a variety of graphical representations including tallying, picture graphs, and bar graphs. Much of this can take place during daily Morning Meeting times as students graph the weather or during science where students might collect data on a topic in science. Teachers will model the various forms of graphing and students will have the opportunity to ask and answer questions on the data represented. Writing.

**Geometry:**
Children will compose and decompose plane and solid shapes as they have done with numbers) thus building an understanding of part-whole relationships as well as the properties of the original shapes and its composite shapes. Students love the challenge of combining shapes to make other shapes and come to understand their relationships and their properties in more sophisticated ways.

<table>
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<tr>
<th>Grade</th>
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<th>Tier 1 Instruction</th>
<th>Tier 1 Instructional Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Screenings/placement: Measures of Academic Progress® MAPS – Primary Grades (Sept/Oct)</td>
<td>1.1. Uses models, place value, and properties of operations to add and subtract within 100. Students (I) can use models, place value, and properties of operations to add and subtract within 100.</td>
<td>Grade One Pacing Guide 2015-2016</td>
</tr>
<tr>
<td></td>
<td>Progress Monitoring/Summative: Measures of Academic Progress® MAPS – Primary Grades (Winter and Spring)</td>
<td>1.2. Demonstrates understanding of two-digit numbers as being composed of tens and ones. Students (I) can demonstrate understanding of two numbers as being composed of tens and ones.</td>
<td></td>
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<tr>
<td></td>
<td>Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)</td>
<td>1.3. Extend the counting sequence. Students (I) can extend the counting sequence by counting to 120, starting from any number less than 120. In this range, Students (I) can read and write numerals and represent a</td>
<td></td>
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</tbody>
</table>
1.1. Understand and apply properties of operations and the relationship between addition and subtraction. (1.OA.B.) Students (I) can understand and apply properties of operations and the relationship between addition and subtraction.

1.3. Represent and solve problems involving addition and subtraction. (OA.A.) Students (I) can represent and solve problems involving addition and subtraction within to solve one-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknown as the sum.

1.4. Add and subtract within 20. (1.OA.C) Students (I) can add and subtract within 20 using mental strategies and know from memory most sums of two one-digit numbers.

1.1 Reason with shapes and their attributes. (1G) Students (I) can reason with shapes and their attributes.

1.1 Measure lengths indirectly and by iterating length units. (MD.A) Students (I) can measure lengths indirectly and by iterating length units.
Grade Two Overview of MTSS Tier 1 Mathematics

Number and Algebraic Thinking:
Grade Two students build on the work of First Grade as they represent and solve one and two-step problems of all three types involving addition and subtraction within 100 (Grade 1 within 20). Two examples representing the complexity are and as follows: “There are 9 blue balls and 5 red balls in the canvas bag. Avi put in 7 more balls. How many balls are in the canvas bag?” and “The zoo had 7 cows and some horses in the big pen. There were 15 animals in the pen. Then 4 more horses ran into the pen. How many horse are there now?” They also continue to relate diagrams to the “situation” equations they write. Given the challenge of comparison problems, the SVU is following the recommendation of McCallum’s Progressions which to omit these from two-step problems. Children develop, discuss, and use efficient, accurate, and generalizable methods to add and subtract multi-digit whole numbers. They develop fluency with efficient procedures, including standard algorithms, and understand why these procedures work (on basis of place value and properties of operations). Children use their understanding of addition to develop quick recall of basic addition facts and related subtraction facts within 20. It is at the end of Grade Two when students are expected to be able to recall all addition and subtraction facts by memory.

Operations and Number Base Ten:
In Grade Two, students extend their understanding of the place value system by viewing 10 tens as forming a new unit called a “hundred” and 10 hundreds forming a new unit called a “thousand.” Representations such as manipulative materials (bundles of straws, base 10 materials), drawings, and place value cards help make the connections between the written three-digit number and the value of each place. Comparing magnitudes of two and three-digit numbers reinforces the understanding that 1 ten is greater than any amount of ones, 1 hundred is greater than any amount of tens and ones. Students can still effectively use “make a ten” strategy when adding a three-digit number and a single digit number (398 + 7 = 400 + 5 = 405) or finding an unknown addend (184 + ____ = 302). Strategies students at this level are likely to employ include a combination of composing and decomposing and counting
on. Teachers will also continue to support students' ability to mentally calculate by adding or subtracting 10 or 100 from a given number. Teachers also begin to work toward multiplication when students engage in skip counting by 5's, 10's, and 100's.

**Geometry:**
Children estimate, measure, and compute lengths as they solve problems involving data, space, and movement through space. Students will compose and decompose two-dimensional shapes, and use geometric knowledge and spatial reasoning to develop foundations for understanding area, fractions, and proportions (for the following years).

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<tbody>
<tr>
<td>2</td>
<td>Screenings/placement: Measures of Academic Progress® MAPS – Primary Grades (Sept/Oct)</td>
<td>2.1. Understands place value. (2.NBT.1) Students (I) understand place value because Students can count within 1000; skip-count by 5s, 10s, and 100s, and Students (I) can read and write numbers to 1000 using base-ten numerals, number names, and expanded form and compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using &gt;, =, and &lt; symbols to record the results of comparisons.</td>
<td>Grade 2 Math Pacing Guide 2015-2016</td>
</tr>
<tr>
<td></td>
<td>Progress Monitoring/Summative: Measures of Academic Progress® MAPS – Primary Grades (Winter and Spring)</td>
<td>2.2. Use place value understanding and properties of operations to add and subtract within 1000. (2.NBT.2) Students (I) can use place value understanding and properties of operations to add and subtract within 1000.</td>
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</tr>
<tr>
<td></td>
<td>Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)</td>
<td>2.1. Represent and solve problems involving addition and subtraction. (2OA.A) Students (I) can represent</td>
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Grade 2 Math Pacing Guide 2015-2016
and solve problems use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.3. Work with equal groups of objects to gain foundations for multiplication. (2OA.2) Students (I) can work with equal groups of objects to determine whether a group of objects (up to 20) has an odd or even number of members, and can write an equation to express an even number as a sum of two equal addends.

Students (I) can also use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.1 Reason with shapes and their attributes. (1G) Students (I) can recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Students (I) can identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
Students (I) can also partition circles and rectangles into two, three, or four equal shares, and describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. I recognize that equal shares of identical wholes need not have the same shape.

2.1 Measure and estimate lengths in standard units. (2MD) Students (I) can estimate and measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Students (I) can also estimate and measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Students (I) can also estimate lengths using units of inches, feet, centimeters, and meters.

Students (I) can also measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

2.2 Relate addition and subtraction to length. (2MD) Students (I) can use addition and subtraction within 100 to solve word problems involving lengths.
that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Students (I) can also represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

2.3 Work with time and money. (2MD) Students (I) can tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. and Students (I) can solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

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<tr>
<td>3</td>
<td>Screenings/placement: Measures of Academic Progress® MAPS – Primary Grades (Sept/Oct)</td>
<td>3.1. Develop understanding of fractions as numbers. (3NF.A.1) Students (I) can understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts AND Students (I) can identify fractions as numbers and can sometimes place</td>
<td>Grade 3 Math Pacing Guide 2015-2016</td>
</tr>
<tr>
<td>MAPS – Primary Grades (Winter and Spring)</td>
<td>Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)</td>
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<td>3.2. Use place value understanding and properties of operations to perform multi-digit arithmetic. (3.NBT.A) Students (I) can round whole numbers to the nearest 10 or 100 AND Students (I) can add or subtract numbers within 1000 AND Students (I) can multiply one digit whole numbers by multiples of 10 (between 10 &amp; 90).</td>
<td>them correctly on a number line diagram</td>
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</tr>
<tr>
<td>3.1 Solve problems involving the four operations, and identify and explain patterns in arithmetic. (3.OA.D) Students (I) can solve problems involving the four operations and use a variable to represent an unknown quantity and identify and explain patterns in arithmetic.</td>
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<tr>
<td>3.2 Represent and solve problems involving multiplication and division. (3.OA.A) Students (I) can represent and solve problems involving multiplication and division.</td>
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</tr>
<tr>
<td>3.3 Multiply and divide within 100. (3.OA.C.7) Students (I) can fluently multiply and divide within 100 from memory.</td>
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</tbody>
</table>
3.4 Understand properties of multiplication and the relationship between multiplication and division. (3.OA.B) Students (I) can understand and use the properties of multiplication (commutative, associative, distributive properties) and the relationship between multiplication and division; Students (I) can explain and show that division is an unknown factor problem.

3.1 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. (3.OA.D.9) Students (I) can identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using the properties of operations.

3.1 Reason with shapes and their attributes. (1G) Students (I) can recognize and draw shapes having specified attributes

Students (I) can also partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.

3.1 Solve problems involving measurement and estimation. (3MD) Students (I) can tell and write time to the nearest minute and measure time intervals in minutes.
Students (I) can solve word problems involving addition and subtraction of time intervals in minutes.
Students (I) can measure and estimate liquid volumes and masses of objects (using grams, kilograms, liters)
Students (I) can add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.

3.2 Represent and interpret data. (3MD) Students (I) can collect, represent, and interpret data with multiple categories.

3.3 Geometric measurement: understand concepts of area and relate area to multiplication and to addition. (3MD) Students (I) can use a given formula to find the area of a variety of two dimensional shapes.

4th Grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>Assessment Plan</th>
<th>Tier 1 Instruction</th>
<th>Tier 1 Instructional Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Screenings/placement: Measures of Academic Progress® MAPS – Primary Grades (Sept/Oct)</td>
<td>4.1. Generalize place value understanding for multi-digit whole numbers. (4NBT.A) Students (I) can explain and generalize place value</td>
<td>Grade 4 Math Pacing Guide 2015-2016</td>
</tr>
</tbody>
</table>
Progress Monitoring/Summative: Measures of Academic Progress® MAPS – Primary Grades (Winter and Spring)

Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)

Understanding for multi-digit whole numbers.

4.2. Use place value understanding and properties of operations to perform multi-digit arithmetic. (4NBT.B) Students (I) can use place value understanding and properties of operations to perform multi-digit arithmetic.

4.3. Extend understanding of fraction equivalence and ordering. (4.NF.A.) Students (I) can extend my understanding of fraction equivalence and ordering by recognizing and generating equivalent fractions, and placing fractions on the number line.

4.4 Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. (4.NF.3d) Students (I) can solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.

4.5. Understand decimal notation for fractions and compare decimal fractions (4.NF.C.5) Students (I) can compare decimal fractions to the hundredths by reasoning about their size.
4.1 Gain familiarity with factors and multiples. (4OA.B4) Students (I) can find factors and multiples for whole numbers in the 1-100 range. Students (I) can determine if a number is prime or composite.

4.2 Use the four operations with whole numbers to solve problems. (4OA.A.1) Students (I) can use the four operations with whole numbers to solve multi-step problems and use estimation to determine the reasonableness of solutions.

4.1 Generate and analyze patterns. (4OA.C5) Students (I) can generate and analyze numerical patterns.

4.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. (4G) Students (I) can draw and identify lines and angles, and classify shapes by properties of their lines and angles.

4.1 Solve problems involving measurement and conversion of measurements. (4MD.A) Students (I) can solve problems involving measurement and conversion of measurements.

4.2 Geometric measurement: understand concepts of angle and measure angles. (4MD.C) Students (I) understand that angles are measured in
4.3 Represent and interpret data. (4MD.B) Students (I) can make a line plot to display a data set of measurements in fractions of a unit (with like denominators limited to 2, 4 and 8), and uses addition and subtraction of fractions to solve problems involving information in the line plot.

<table>
<thead>
<tr>
<th>Grade</th>
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<th>Tier 1 Instruction</th>
<th>Tier 1 Instructional Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Screenings/placement: Measures of Academic Progress® MAPS – Primary Grades (Sept/Oct) Progress Monitoring/Summative:</td>
<td>5.1. Understand the place value system. (5NBT.A) Students (I) can explain the value of digits, based on their placement. 5.2. Perform operations with multi-digit whole numbers and with decimals to hundredths. (5NBT.B) Students (I) can</td>
<td>Grade 5 Math Pacing Guide 2015-2016</td>
</tr>
</tbody>
</table>

reference to a circle, and can measure angles in whole number degrees using a protractor. Students (I) can also sketch angles of specific measure and solve addition and subtraction real-world mathematical problems to find unknown angles on a Diagram.
<table>
<thead>
<tr>
<th>Measures of Academic Progress® MAPS – Primary Grades (Winter and Spring)</th>
<th>perform operations with multi-digit whole numbers and with decimals to hundredths.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs)</td>
<td>5.3. Use equivalent fractions as a strategy to add and subtract fractions. (5NF.A) Students (I) can use equivalent fractions as a strategy to add and subtract fractions.</td>
</tr>
<tr>
<td></td>
<td>5.4. Solve real world problems involving multiplication of fractions and mixed numbers. (5.NF.7) Students (I) can solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.</td>
</tr>
<tr>
<td></td>
<td>5.1 Write and interpret numerical expressions. (5.OA.A) Students (I) can write and interpret numerical expressions.</td>
</tr>
<tr>
<td></td>
<td>5.1 Analyze patterns and relationships (5OA.B) Students (I) can 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.</td>
</tr>
<tr>
<td></td>
<td>5.1 Graph points in the coordinate plane to solve real-world and mathematical problems. (5G.A) Students (I) can graph points in the coordinate plane (1st quadrant) to solve real-world and mathematical problems.</td>
</tr>
</tbody>
</table>
5.2 Classify two-dimensional figures into categories based on their properties. (5G.B) Students (I) can classify two-dimensional figures into categories based on their properties.

5.1 Convert like measurement units within a given measurement system. (5MD.A) Students (I) can convert among different-sized standard measurement units within a given measurement system.

5.2 Represent and interpret data. (5MD.B) Students (I) can make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and use operations on fractions to solve problems.

5.3 Geometric measurement; understand concepts of volume. (5MD.C) Students (I) can use unit cubes (number of unit cubes, edge length, height) to find the volume of rectangular prisms and represent the volume of a solid figure as n cubic units. Students (I) can also solve real-world and mathematical problems by applying the formulas for volume and find the volume of two non-overlapping right rectangular prisms by adding the volumes of the two non-overlapping parts.
## Grade 6 Math Pacing Guide 2015-2016

| 6-8 | Screenings/placement: Measures of Academic Progress® MAPS – Middle Grades (Sept/Oct)  
Progress Monitoring/Summative: Measures of Academic Progress® MAPS – Middle Grades (Winter and Spring)  
Diagnostic: (teachers use as needed to inform core instruction and/or Tier 2 intervention needs) | Instruction | Instructional Practices |
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</thead>
<tbody>
<tr>
<td>6.1. Compute fluently with multi-digit numbers and find common factors and multiples. (6NS.A) Students (I) can compute fluently (accurately, flexibly, and efficiently) with multi-digit numbers and can find common factors and multiples.</td>
<td>Grade 6 Math Pacing Guide 2015-2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2. Apply and extend previous understandings of numbers to the system of rational numbers. (6NS.B) Students (I) can apply and extend previous understandings of numbers to the system of rational numbers.</td>
<td>Grade 7 Math Pacing Guide 2015-2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1. Apply and extend previous understandings of arithmetic to algebraic expressions. (6EE.A) Students (I) can apply and extend previous understandings of arithmetic to algebraic expressions.</td>
<td>Grade 8 Math Pacing Guide 2015-2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2. Reason about and solve one-variable equations and inequalities. (6EE.B) Students (I) can explain and solve one-variable equations and inequalities.</td>
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<tr>
<td>6.3. Represent and analyze quantitative relationships between dependent and independent variables. (6EE.C) Students (I) can represent and analyze quantitative relationships between dependent and independent variables.</td>
<td></td>
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<tr>
<td>6.1 Understand ratio concepts and use ratio reasoning to solve problems (6RP.A) Students (I) can understand ratio concepts and use ratio reasoning to solve problems.</td>
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<tr>
<td>6.1 Solve real-world and mathematical problems involving area, surface area, and volume. (6G.A) Students (I) can solve real-world and mathematical problems involving area, surface area, and volume.</td>
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<tr>
<td>6.1 Develop understanding of statistical variability. (6SP.A) Students (I) can demonstrate an understanding of statistical variability given a known set.</td>
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</table>
Addison-Rutland Supervisory Union Multi-Tiered System of Support  
Math TIER 1 Instruction **Eureka Math/Engage New York**  
High School Level

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<th>Grades</th>
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<th>Tier 1 Instruction</th>
<th>Tier 1 Instructional Best Practices</th>
</tr>
</thead>
</table>
| 9-12   | Screenings/placement: Measures of Academic Progress® MAPS – Grades 9 & 10 (Sept/Oct) | 1. Reason quantitatively and use units to solve problems. (N.Q) - Students (I) can reason quantitatively and use units to solve problems, converting as appropriate.  
2. Extend the properties of exponents to rational exponents. (HSN.RN.1 and 2) - Students (I) can extend the properties of exponents by rewriting expressions using rational exponents and solve problems using the properties of exponents.  
with radicals and integer exponents. HSN.RN.2, 3 - Students (I) can solve problems with radicals and integer exponents in real world problem situations.  
Interpret the structure of expressions and write expressions in equivalent forms to solve problems. HSA.SSE.1-3 - Students (I) can interpret the structure of expressions and write expressions in equivalent forms to solve problems. | Grade 9-12 Math Pacing Guide 2015-2016 |
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<tbody>
<tr>
<td></td>
<td>forms to solve problems.</td>
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<tr>
<td></td>
<td>2. Understand, represent and solve equations and inequalities in one variable both algebraically and graphically.-Students (I) can understand, represent and solve equations and inequalities in one variable both algebraically and graphically.</td>
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</tr>
<tr>
<td></td>
<td>3. <strong>Create equations that describe numbers or relationships. HSA.CED.2,4-Students (I) can create equations that describe numbers or relationships.</strong></td>
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</tr>
<tr>
<td></td>
<td>4. <strong>Understand, represent and solve systems of equations and inequalities both algebraically and graphically. HSA.REI.5, 6-Students (I) can understand, represent and solve systems of equations and inequalities both algebraically and graphically.</strong></td>
<td></td>
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<tr>
<td></td>
<td>5. Perform arithmetic operations on polynomials, understand the relationship between zeros and factors of polynomials, use polynomial identities to solve problems and rewrite rational expressions. HSA.APR.1,2,3,4,5,6,7-Students (I) can perform arithmetic operations on</td>
<td></td>
</tr>
</tbody>
</table>
polynomials, understand the relationship between zeros and factors of polynomials, use polynomial identities to solve problems and rewrite rational expressions.

1. Understand and use different representations to interpret and analyze functions by examining their key features, including function notation and rate of change.
   HSF.IF.1,2,5,6
   HSF.LE.1a,b,c, 5-Students (I) can understand and use different representations to interpret and analyze functions by examining their key features, including function notation and rate of change.

2. **Build a function that models a relationship between two quantities and build new functions from existing functions.
   HSF.IF.3,4
   HSF.BF.1b,1c,3, 4, 4a, 4b, 4c, 4d, 5-Students (I) can build a function that models a relationship between two quantities and build new functions from existing functions.

3. **Construct and compare linear, quadratic and exponential models and solve problems and interpret expressions for functions, drawing conclusions about their meaning in terms of the situation.
HSF.LE.1-3
HSF.LE.6
HSF.IF.4-6- Students (I) can construct and compare linear, quadratic and exponential models and solve problems and interpret expressions for functions, drawing conclusions about their meaning in terms of the situation they model.

4. **Extend the domain of trigonometric functions using the unit circle, model periodic phenomena with trigonometric functions, and prove and apply trigonometric identities.** - Students (I) can extend the domain of trigonometric functions using the unit circle, model periodic phenomena with trigonometric functions, and prove and apply trigonometric identities.

1. Define and understand congruence in terms of transformations and rigid motions and use these transformations and geometric constructions to prove geometric theorems.

   HSG.CO.6, 7, 8, 9, 10, HSG.CO.1, 2, 3, 4, 5 - Students (I) can define and understand congruence in terms of transformations and rigid motions and use these transformations and geometric constructions to prove geometric theorems.
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<tbody>
<tr>
<td>2. Understand similarity in terms of transformations and prove theorems involving similarity. HSG.SRT.1,2,3,4,5</td>
<td>-Students (I) can understand similarity in terms of transformations and prove theorems involving similarity.</td>
</tr>
<tr>
<td>3. <strong>Define trigonometric ratios and solve problems involving right triangles and apply trigonometry to general triangles</strong> HSG.SRT.6, 7, 8, 9, 10, 11 HSF.TF.9-</td>
<td>Students (I) can define trigonometric ratios and solve problems involving right triangles and apply trigonometry to general triangles.</td>
</tr>
<tr>
<td>4. Understand and apply theorems about circles and find arc lengths and areas of sectors of circles. HSG.C.1, 2, 3, 4, 5</td>
<td>Students (I) can understand and apply theorems about circles and find arc lengths and areas of sectors of circles.</td>
</tr>
<tr>
<td>5. <strong>Translate between the geometric description and the equation for a conic section and use coordinates to prove simple geometric theorems algebraically.</strong> HSG.GPE.1,2,3</td>
<td>Students (I) can translate between the geometric description and the equation for a conic section and use coordinates to prove simple geometric theorems algebraically.</td>
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</table>
| 6. **Visualize relationships between two-dimensional and three-dimensional objects and explain volume formulas and use them to solve problems.**  
**HSG.GMD.1, 2, 3, 4** - Students (I) can visualize relationships between two-dimensional and three-dimensional objects and explain volume formulas and use them to solve problems. |
| 7. **Apply geometric concepts such as properties of figures, distance and midpoint formulas, and slope, to prove geometric shapes.**  
**HSG.CO.11, 12, 13**  
**HSG.GPE.4, 5, 6, 7** - Students (I) can apply geometric concepts such as properties of figures, distance and midpoint formulas, and slope, to prove geometric shapes. |
| 8. **Apply geometric concepts such as density and volume to describe objects and solve design problems.**  
**HSG.MG.1, 2, 3** - Students (I) can apply geometric concepts such as density and volume to describe objects and solve design problems. |
| 1. **Summarize, represent, and interpret data in a single variable** |   |   |
or two variables and interpret linear models.
HSS.ID.1,3,5,6a,c,7,8,9-Students (I) can summarize, represent, and interpret data in a single variable or two variables and interpret linear models.

2. Understand and evaluate random processes underlying statistical experiments and make inferences and justify conclusions from sample surveys, experiments and observational studies.
HSS.IC.1,2,3,4,5,6-Students (I) can understand and evaluate random processes underlying statistical experiments and make inferences and justify conclusions from sample surveys, experiments and observational studies.

3. Understand independence and conditional probability, use them to interpret data, and use the rules of probability to compute probabilities of compound events in a uniform probability model.
HSS.CP.1,2,3,4,5,6,7,8,9-Students (I) can understand independence and conditional probability, using them to interpret data, and use the rules of probability to compute probabilities of compound events in a uniform probability model.
|   | 4. Calculate expected values and use them to solve problems, and use probability to evaluate outcomes of decisions. HSS.MD.1,2,3,4,5,5a,5b,6,7-Students (I) can calculate expected values and use them to solve problems, and use probability to evaluate outcomes of decisions.  
5. **Use the center and spread of two or more different data sets to fit it to a model and estimate population based on that model. HSS.ID.2, 4-Students (I) can explain in context the center and spread of two or more different data sets. |

Addison-Rutland Supervisory Union Multi-Tiered System of Support
Math TIER 2 Intervention  
*(supplemental and in addition to the Tier 1 Curriculum and instructional practice Eureka Math/Engage New York)*

Tier 2 support is designed specifically for those students who are not making adequate progress in Tier 1 Core Curriculum, or who are at risk for academic difficulties. Tier 2 instruction/intervention is an additional instructional support added to classroom instruction that focuses on a specific area of diagnosed need. This instruction could happen with multiple students in a small group by the classroom teacher or other qualified specialist. The duration of the intervention in the second tier should be flexible, temporary, and based upon assessment of progress. Students receiving intervention experience classroom instruction as their main instruction program. Tier 2 intervention supplements (boosts) classroom instruction.

The following chart provides screening/placement assessment data used to determine Tier 2 intervention, as well as additional diagnostic assessment tools that can be used to inform whether Tier 3 intervention is warranted. Tools used to progress monitor and provide summative data for tier 2 interventions are also included. The chart contains the Supervisory Union Tier 2 intervention programs and proposed best practices.
<table>
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<tr>
<th>Grade</th>
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<th>Tier 2 Instruction</th>
<th>Tier 2 Instructional Best Practices</th>
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<td>1</td>
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<tr>
<td>2</td>
<td>Do the Math beginning Module Assessment (web-based).</td>
<td>Do The Math Number Core:</td>
<td>Do the Math Modules should be delivered 30 minutes daily 5 days per week. It should take 30 days to complete a module.</td>
</tr>
<tr>
<td></td>
<td>Do the Math Mid-module assessment every 5 lesson (web-based).</td>
<td><em>Addition &amp; Subtraction Number Core:</em></td>
<td>Research based instructional routines:</td>
</tr>
</tbody>
</table>
|       | Do the Math End of Module assessment (web-based). |  - Identify pairs of addends that make 5.  
  - Identify pairs of addends that make 10.  
  - Subtract one-digit numbers from numbers to 10.  
  - Solve word problems using addition and subtraction.  
  - Write numbers to 20 as tens and ones.  
  - Add numbers with sums to 20.  
  - Subtract one-digit numbers from numbers to 20.  
  - Communicate ideas with key math vocabulary: add, addend, addition, difference, equals, equation, minus, one-digit number, place value, plus, subtract, subtraction, sum, and two-digit number. | Scaffolded content  
Explicit instruction  
Manipulatives for concrete experiences  
Games  
Children’s literature  
Meaningful contexts  
Visual representations  
Gradual release  
Student interaction |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>3</td>
<td></td>
<td>Do the Math Addition &amp; Subtraction A, B, and/or C:</td>
<td>Do the Math Modules should be delivered 30 minutes daily 5 days per week. It should take 30 days to complete a module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADDITION &amp; SUBTRACTION A:</strong></td>
<td>Research based instructional routines:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Identify pairs of numbers with sums of 10.</td>
<td>Scaffolded content</td>
</tr>
<tr>
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<td></td>
<td>- Write any two-digit number as tens and ones.</td>
<td>Explicit instruction</td>
</tr>
<tr>
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<td></td>
<td>- Calculate the sum to 99 for any two or three addends.</td>
<td>Manipulatives for concrete experiences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Solve word problems with two or three addends with sums to 99.</td>
<td>Games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Communicate ideas with key math vocabulary: add, addition, equation, plus, equals, sum, addend, and multiples of 10.</td>
<td>Children’s literature</td>
</tr>
<tr>
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<td></td>
<td>Monitoring progress</td>
<td>Meaningful contexts</td>
</tr>
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<td></td>
<td>Teaching vocabulary and language</td>
<td>Visual representations</td>
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<td>Monitoring progress</td>
<td>Gradual release</td>
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<td>Student interaction</td>
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<td>Meaningful practice</td>
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<td>Teaching vocabulary and language</td>
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<td>Monitoring progress</td>
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<tr>
<td>Grade</td>
<td>Tier 2 Assessment Plan</td>
<td>Tier 2 Instruction</td>
<td>Tier 2 Instructional Best Practices</td>
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<tr>
<td>4</td>
<td></td>
<td>Do The Math Multiplication A, Division A, and/or Fractions A</td>
<td>Do the Math Modules should be delivered 30 minutes daily 5 days per week. It should take 30 days to complete a module. Research based instructional routines: Scaffolded content Explicit instruction Manipulatives for concrete experiences Games Children’s literature Meaningful contexts Visual representations</td>
</tr>
</tbody>
</table>
### MULTIPLICATION A:
- Calculate products with factors 1 through 6.
- Communicate ideas with key math vocabulary:
  - Commutative Property of Multiplication, equal, factor, multiplication, multiplication equation, multiply, product, and times.
- Represent combining equal groups with related addition and multiplication equations.
- Write a multiplication equation for a word problem.
- Write a word problem for a given multiplication equation.
- Calculate products when one factor is 0.
- Apply the Commutative Property of Multiplication using factors 0 through 6.

### DIVISION A:
- Calculate quotients with and without remainders for dividends up to 100 and divisors up to 10.
- Represent division in three different ways:
  - $a \div b = c$; $a \div b = c$; $b \div a$
- Write and solve division word problems for both sharing and grouping situations.
- Communicate ideas with key math vocabulary:
  - divide, division, remainder, quotient, and divisor.

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Gradual release
Student interaction
Meaningful practice
Teaching vocabulary and language
Monitoring progress
<table>
<thead>
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<td>5</td>
<td></td>
<td></td>
<td>Do the Math Modules should be delivered 30 minutes daily 5 days per week. It should take 30 days to complete a module.</td>
</tr>
</tbody>
</table>

**MATH MODULES: 5**

**FRACTIONS A:**
- Name parts of a whole as fractions and use standard notation.*
- Identify equivalent fractions.*
- Compare and order fractions. Use benchmarks of $\frac{1}{2}$ and 1.*
- Add fractions.*
- Solve problems using fractions.*
- Communicate ideas with key math vocabulary:
  - whole, one-half, fraction, one-fourth, one-eighth, one-sixteenth, numerator, fraction bar, denominator, equation, equivalent, equals, is less than, is greater than, mixed number, improper fraction, one-third, one-sixth, and one-twelfth.

* Fractions are limited to fractions with denominators of 2, 3, 4, 6, 8, 12, and 16.

**MULTIPLICATION B:**
- Calculate products with factors 0 through 12.
- Represent arrangements of equal rows and rectangles with multiplication equations.
- Communicate ideas with key math vocabulary:
  - multiplication equation, factor, product, Commutative Property of Multiplication, square number, multiple, and Zero Property of Multiplication.
- Use the Commutative Property of Multiplication to solve problems.
- Recall products for facts through 12 x 12.

Research based instructional routines:
- Scaffolded content
- Explicit instruction
- Manipulatives for concrete experiences
- Games
- Children’s literature
- Meaningful contexts
- Visual representations
- Gradual release
- Student interaction
- Meaningful practice
- Teaching vocabulary and language
<table>
<thead>
<tr>
<th>Grades</th>
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<th>Tier 2 Instructional Best Practices</th>
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<td>6-8</td>
<td>Builds foundational concepts and practices necessary for algebra: <strong>Math 180</strong>: whole class Do Now;</td>
<td>Math 180 Best Practice instructional model: 45-55 minutes of direct instruction and individualized</td>
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teacher-facilitated group instruction; student software for individualized practice practice each day (can be done over 2 days, it will just take more than 1 year).

Whole group introduction - small group rotations

Research based instructional routines:
Explicit instruction
Teaching growth mindset
Think - Pair - Share
Turn and Talk
Question Chains
Show of Thumbs
Answers Up
Teaching vocabulary
Teaching problem solving
Monitoring progress

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<td>6-8</td>
<td>Grade 6: Do The Math</td>
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**MULTIPLICATION C:**
- Use the Commutative Property, the Associative Property, and the Distributive Property of Multiplication over Addition.
- Calculate products for three-digit factors times one-digit factors.
- Calculate products for two-digit factors times two-digit factors.
- Make estimates of products.
- Communicate ideas with key math vocabulary: factor, product, Commutative Property of Multiplication, Associative Property of Multiplication, multiple, and estimate.

**DIVISION C:**
- Write related multiplication and division equations.
- Calculate the quotients and remainders for two-digit through four-digit numbers divided by one- and two-digit divisors.
- Use the inverse relationship between division and multiplication to solve problems.
- Solve problems for sharing and grouping situations.
- Communicate ideas with key math vocabulary: division equation, dividend, divisor, quotient, remainder, and divisible.
### Fractions C:

- Identify and generate equivalent fractions.
- Rename fractions in lowest terms or simplest form.
- Rename improper fractions as mixed numbers and vice versa.
- Make estimates for sums and differences of fractions with like and unlike denominators.
- Add and subtract fractions with like and unlike denominators.
- Communicate ideas with key math vocabulary: lowest terms, simplest form, mixed number, improper fraction, estimate, and sequence.
- Solve problems using fractions.

### Do the Math Now - Grades 6 and Up:

**Math 180**: whole class Do Now; teacher-facilitated group instruction; student software for individualized practice

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| 9-12   | Builds foundational concepts and practices necessary for algebra: **Math 180**: whole class Do Now; teacher-facilitated group instruction; student software for individualized practice  
**Do the Math Now!** | Math 180 Best Practice instructional model: 45-55 minutes of direct instruction and individualized practice each day (can be done over 2 days, it will just take more than 1 year).  
Whole group introduction - small group rotations  
Research based instructional routines: Explicit instruction  
Teaching growth mindset |
Addison-Rutland Supervisory Union Multi-Tiered System of Support
Math TIER 3 Intervention

Tier 3 Supports are intended for students who are not making sufficient progress given high-quality instruction in Tiers 1 and 2. Tier 3 interventions are individualized and customized for a very small number of students whose needs cannot be met through supplemental programs. These students require significant backfilling of skills in order to access Tier 1 instruction and Tier 2 interventions. These students are significantly below grade level in a particular skill area, evidenced by data. Students in Tier 3 continue to receive core instruction at Tier 1, focused on appropriate CCSS, although some portions of Tier 3 may supplant (replace) classroom instruction. Interventions at Tier 3 are tailored to the student’s needs and provided by a highly trained, knowledgeable and skilled educator. In some schools, Tier 3 will be an indication of special education placement; in others it may precede special education. The follow chart includes a list of assessments that may be considered to help teachers target the specific skill area(s) needing Tier 3 intervention. The chart also contains a list of research based interventions and instructional practices categorized by the elements of reading development.
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<td>Do the Math Now</td>
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<tr>
<td>Upper Elem. - High School</td>
<td>Do the Math</td>
<td>Do the Math Now Math 180</td>
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