Curriculum Sets

At Demme Learning, we want to ensure that our customers have everything they need to be successful in our program. Math-U-See is unique, and each program component is essential to students' success.

With this in mind, we have created curriculum sets that include the appropriate materials for our new and returning customers. Curriculum sets provide customers cost savings over purchasing the individual elements separately. However, customers who only require specific elements can purchase items individually (e.g., a Student Pack).

Components		
	Type	**Includes**
Sets	**Universal**	• Instruction Manual • Instruction Videos/DVD • Student Workbook • Tests (except for *Primer* level) • All manipulatives required for level • Lifetime access to the Demme Digital Pack
	Level Up	• Instruction Manual • Instruction Videos/DVD • Student Workbook • Tests • Lifetime access to the Demme Digital Pack • Levels *Zeta—Algebra 1* include a Algebra/Decimal Insert kit
	Level Up Base Sets (*Zeta* through *Algebra 1*)	• Instruction Manual • Instruction Videos/DVD • Student Workbook • Tests • Lifetime access to the Demme Digital Pack
Packs	**Instruction**	• Instruction Manual with lesson-by-lesson instruction • Solutions • Instruction Videos/DVD with lesson-by-lesson video instruction
	Student	• Student Workbook • Tests (except for the *Primer* level)
	Demme Digital	• Lifetime access to streaming instruction videos and Instruction Manual PDF • Lesson solutions • Skip-Count Songs MP3s and Songbook PDFs (where applicable) • Online resources • The Math-U-See Digital Manipulatives (where applicable)

	Type	Includes
Kits	**Integer Block**	• 133 calcium carbonite-infused polypropylene pieces • 2-blocks (10) • 3-blocks (10) • 4-blocks (10) • 6-blocks (10) • 7-blocks (10) • 8-blocks (10) • 9-blocks (10) • 100-blocks (10) • 5-blocks (13) • unit blocks (20) • 10-blocks (20) • Decimal Street®/Block Clock poster • Informational booklet
	Fraction Overlay	• 49-piece set of vinyl chloride fractions and clear-lined overlays • 25 colored pieces: • 5 green (representing units), 2 orange, 3 pink, 4 yellow, 5 light blue, 6 purple, and 8 brown pieces (representing numerators). • Clear-lined overlays (portraying the denominator) represent halves, thirds, fourths, fifths, sixths, eighths, and tenths, eighths, and sixteenths. • Three reference cards • Wipe-off marker • Informational booklet
	Algebra/Decimals Inserts	• Four 5-inch by 5-inch red squares, four 5-inch by 5-inch green squares • Fifteen each of the blue and gray ½-inch by 5-inch flat strips • Twenty ½-inch red cubes. These are made from calcium carbonate infused polypropylene.
Misc.	**Skip Count and Addition Facts CD and Songbook**	• Songs to help the student learn the 2 through 9 skip-counting facts. There are two versions: Biblical (Christian lyrics) and Science and Literature (secular lyrics). • Addition facts of the +9s, +8s, doubles, doubles + 1, making 10s, making 9s, and extras: 3 + 5, 4 + 7, and 5 + 7

	Administrator	Teacher	Student
Schools Licenses	• Can assign Teacher licenses based upon the purchased amount of licenses • Can assign themselves a teacher license to assign levels to students or function as a Teachers	• Access to all levels up to *PreCalculus* • Ability to assign any of the levels to students • Can only assign the allotted amount of Student Licenses	• Can only access one assigned level at a time • Multiple levels require multiple licenses per student

Instruction Manual

The Instruction Manual for each level provides lesson-by-lesson written instruction of each new topic. It also contains sample problems designed to help the parent/teacher learn new topics and present them to the student. Some lessons also include teaching tips and games to help reinforce topics. Lastly, the Instruction Manual may contain additional material that is not in the video lesson.

In 2012 we edited the instruction manuals to clarify explanations, improve definitions, and add suggestions for supplemental activities. For more detailed information regarding the 2012 edition changes, please refer to the *2012 Edition Summary Handbook*.

Table of Contents

The Table of Contents lists the topics covered in each lesson. These can be found after the Curriculum Sequence page in each Instruction Manual, or on information pages for each level in the Math-U-See online store.

Solutions

The solutions pages (found in the Instruction Manual after lesson instruction) provide step-by-step solutions for the problems in the Student Workbook and Tests booklet. The order of the solutions is Student Lesson Pages, Honors/Application and Enrichment Pages, and Tests. (*Special notes:* The solutions for *Primer* are reproductions of the A and D pages only, and there are no tests. The Application and Enrichment pages for *Primer* through *Beta* do not have solutions.)

Symbols and Tables

The Symbols and Tables pages contain important formulas and mathematical symbols. In *Beta* through *Calculus*, the Symbols and Tables pages can be found in the Instruction Manual after the Tests solutions pages, and in the Student Workbook after the final lesson pages.

Glossary

The Glossary provides definitions for key terms presented in the lessons for all levels, from *Alpha* through *Calculus*. The Glossary is typically found in the Instruction Manual and Student Workbook after the Symbols and Tables pages. In *Alpha*, the Glossary is after the solutions for the Tests.

Index

There are two types of index pages. The first is the **Master Index**, which is located in the Instruction Manual after the Glossary. This Master Index gives a list of the levels in which main topics are presented throughout our curriculum. In *Primer* through *Zeta*, it is labeled as the "Master Index for General Math." In *PreAlgebra* through *Calculus*, it is labeled as the "Secondary Levels Master Index." The second type is the **Level Index**. The Level Index includes a list of main topics for the specific level material. This is located after the Master Index.

Honors Topic Lists

This list includes all the honors topics for each level and is located in the Instruction Manual after the Scope and Sequence page. Honors Topic Lists only appear in *Algebra 1* through *PreCalculus*. (*Important note:* Some parents assume that completing the Honors pages qualifies the student to receive credit for completing an Honors course. To avoid this misunderstanding, future editions of the upper-level courses will rename these as Application and Enrichment pages. *Pre-Algebra* was updated to reflect this change in the 2016-2017 school year.)

Student Workbook

Lesson Practice

The Lesson Practice pages help students progress toward mastery of new concepts from each lesson. The problems on these pages are intended to be used as samples for teaching as well as for independent practice (when students are able to complete them without assistance). Instructors should support students as needed through guided practice but encourage them to be as independent as possible. Students should complete lesson practice problems until they are able to successfully demonstrate mastery by teaching the concept using the Build, Write, Say method to teach the concept back to the instructor. If the student is struggling to demonstrate mastery, reteach the concept before assigning the next Lesson Practice page.

Systematic Review

Systematic Review pages review new material along with math topics previously studied, enabling students to practice new concepts in a broader context. The word problems on these pages require practical application of previously-mastered topics. The Systematic Review pages are found in *Primer* through *Algebra 2*.

Application and Enrichment

In the 2012 edition of the Student Workbook for *Primer* through *Zeta*, an Application and Enrichment section follows the Systematic Review pages. These pages are generally labeled "G," with the exception of *Alpha* Lesson 1, which is labeled "E." These pages were added because customers had requested more word problems, teaching tips related to potential standardized test topics, and activities for younger students (similar to the Honors pages). Application and Enrichment pages challenge students to review and use their math skills in a variety of different ways:

- Provide enjoyable activities for practicing lesson concepts
- Stimulate thinking by presenting concepts in different formats
- Introduce new concepts that students may find interesting
- Guide students through different strategies for solving word problems
- Provide opportunities to use math skills in unfamiliar contexts
- Challenge students beyond regular lesson instruction

Application and Enrichment topics do not need to be mastered before moving to the next lesson, but may be helpful when taking standardized tests. For more detailed information regarding the content of the Application and Enrichment pages, please refer to the *2012 Edition Summary Handbook*. These pages are not incorporated into the Math-U-See international versions.

Honors Application Pages

Honors Application pages are found in upper-level (*Algebra 1–PreCalculus)* Student Workbooks. They follow the Systematic Review pages in each lesson and are labeled "H," indicating Honors. Honors pages are special challenge lessons designed to expand students' critical thinking skills. They primarily contain word problems which require either a practical application of lesson topics or for students to utilize the topic in an unfamiliar context. Use of these extra pages may help the student prepare for upper-level math and science, complete more complex word problems, further develop logical-thinking skills, and familiarize them with problems they would likely encounter on a standardized test, such as the SAT. Beginning in 2017, these pages were renamed "Application and Enrichment" in the *PreAlgebra* level to match the lower levels.

Quick Review/Tip Sections

The Quick Review/Tip sections provide review and new applications of previous topics. These sections can be found in the *Beta* through *Algebra 1* Student Workbooks. There are no references to Quick Review sections in the Instruction Manual.

Record Keeping Forms

Record Keeping Forms are used to track a student's progress. These are located in the Student Workbook after the title page for *Alpha* through *Pre-Algebra*. They are also available on our website in the Parent Resources section.

Tests

Every level (with the exception of *Primer*) contains a Tests booklet. These tests are designed to be a summative assessment tool to help determine mastery but may also be used as extra worksheets. For *Algebra 1* through *Calculus*, the lesson tests are in a multiple-choice format. For *Algebra 2* and *PreCalculus*, the first ten problems cover the new topic of each lesson and the last five problems cover previously learned topics.

Resources

Worksheet Generator

The Worksheet Generator allows instructors to create and print worksheets and corresponding answer keys for selected lessons from *Alpha* through the first part of *PreAlgebra*. It is available in the Parent Resources or e-Learning sections of the Math-U-See website, the Demme Digital Pack, and the Professional Access section (for teachers who have completed training). To obtain answers for the corresponding worksheet, the answer key must be printed following the worksheet without resetting the page.

Online Drill Application

The Online Drill application is available in the Parent Resources or e-Learning sections of our website and may also be accessed via the Demme Digital Pack. It is available in the Professional Access section for teachers who have completed training as well. The Online Drill Application allows the student to review math facts online for addition, subtraction, multiplication, and division. There are 20 automatically-generated problems for each attempt. The student can choose which fact family(s) or operation(s) they would like to practice.. At the end of the attempt, the system will display the completion time and how many problems were answered correctly.

For *Algebra 1*, there is a PDF file containing one additional Lesson Practice page per lesson and an accompanying PDF file with solutions. For *Algebra 2*, there is a PDF file containing one additional Systematic Review page per lesson and an accompanying PDF file with solutions. These can be printed from either the Parent Resources section of the website (under Resources by Level), or the Professional Access section of the website (under Level-Specific Resources). Solutions are also available in the Digital Pack under the Resources tab for the respective levels.

Revision Codes

For the 2009–2010 editions, revision codes for each edition can be found in the back of the book on the last bound page, and for some printings, on the copyright page. The 2012 edition

books have revision codes on the copyright page and on the back cover, along with the part number.

Manipulative Kits

Mathematics is a way of representing real-world processes with abstract symbols and reasoning. Young children begin mathematical instruction by associating concrete objects (such as buttons, pennies, and pencils) with numbers describing quantities. To make use of this skill, the Math-U-See Curriculum introduces manipulatives to serve as representations of numbers. Therefore, instead of using 126 pennies, we teach the student to use one red 100-block, two blue 10-blocks, and a purple 6-block. While other programs break from the manipulatives at a relatively early age, the Math-U-See curriculum uses them all the way through *Algebra 1* to provide a cognitive bridge from the concrete to the representational to the abstract, which research has shown to be essential in developing mathematical understanding.

Manipulatives themselves are only tools. Research indicates that their greatest value comes when a competent adult guides the student and helps them make the connection between the representation and the abstract concept. Adults should first model the process, then scaffold learning until the student is able to use the method independently to solve problems. Scaffolding is a way to provide support for students by breaking topics down into manageable chunks as they progress towards stronger understanding and ultimately greater independence.

Integer Block Kit

Customers were encouraged to purchase two of our 88-piece legacy block sets to have enough to build all the necessary problems in the curriculum. However, the two sets provided more than necessary of some of the kinds of blocks. The Integer Block Kit provides just the right amount of blocks in one convenient kit. In addition, the instructional booklet highlights the ways the blocks will be used throughout the levels, emphasizing the value of this important resource.

Fraction Overlay Kit

The Fraction Overlays are used throughout *Epsilon* to teach all operations with fractions. The colored vinyl pieces represent the numerator and correspond to the integer block colors. The clear-lined vinyl overlays portray the denominator. The instructional booklet highlights the ways the overlays will be used, and the reference cards provide additional guidance for students as they learn important concepts. The conveniently-sized, fold-shut case keeps overlays more secure, and clear labeling provides improved ease of use.

Algebra/Decimal Inserts

The Algebra/Decimal Inserts are used in conjunction with the Integer Block Kit to represent more abstract and advanced mathematical concepts. In *Zeta*, the Algebra/Decimal Inserts are used to teach addition, subtraction, and multiplication of decimals. In *PreAlgebra* and

Algebra 1, they are used to represent and solve both algebraic expressions and operations with polynomials. The updated Algebra/Decimal Insert Kit includes a booklet that gives a brief overview of how the inserts can be used to teach a wide variety of mathematical and algebraic concepts. While students are able to build most problems in the Math-U-See curriculum with this set, there are some problems that require additional pieces. Should the customer choose to purchase additional pieces to ensure students are able to build every problem, they will need **five additional inserts of each insert piece**.

Elements of Each Level										
Levels	Skip Count/Addition Facts CD and Songbook	**Pack**			**Kit**			**Sets**		
		Instruction	Student	Digital Pack	Integer Block	Fraction Overlay	Algebra/ Decimal Insert	Universal	Level Up	Level Up Base
Primer	✔	✔	✔	✔	✔			✔	✔	
Alpha	✔	✔	✔	✔	✔			✔	✔	
Beta	✔	✔	✔	✔	✔			✔	✔	
Gamma	✔	✔	✔	✔	✔			✔	✔	
Delta		✔	✔	✔	✔			✔	✔	
Epsilon		✔	✔	✔		✔		✔	✔	
Zeta		✔	✔	✔	✔		✔	✔	✔†	✔‡
Pre Algebra		✔	✔	✔	✔		✔	✔	✔†	✔‡
Algebra 1		✔	✔	✔	✔		✔	✔	✔†	✔‡
Geometry		✔	✔	✔				✔		
Algebra 2		✔	✔	✔				✔		
Pre Calculus		✔	✔	✔				✔		
Calculus		✔	✔							
Stewardship*		✔	✔							

†Have Integer Blocks and need the Algebra/Decimal Insert Kit

‡Have both Integer Blocks and Algebra/Decimal Insert Kit

** Lesson problems include questions from both the consumer math topic and Biblical Principles and Scripture Studies, as well as questions to encourage family discussion

Level Descriptions			
Level	**Focus**	**Topics**	**Note**
Primer	Introduction to Math	• Number recognition 0–9 place value • simple addition; skip counting by 2s, 5s, 10s • Telling time • Shapes • Simple subtraction	• All of these topics will be presented again (mostly in *Alpha*) except for number recognition. • Because number recognition/counting 0–9 is expected for entry into *Alpha*, it should be mastered while in *Primer* (or prior to beginning *Alpha*).
Alpha	Single-digit Addition and Subtraction	• Place value • Single-digit addition with mastery of each fact • Single-digit subtraction with mastery of each fact • Telling time	
Beta	Multiple-digit Addition and Subtraction	• Place value with multiple-digit addition and subtraction • Regrouping	
Gamma	Multiplication	• Skip counting of each fact • Leading into mastery of single-digit multiplication facts • Multiple-digit multiplication • Regrouping	
Delta	Division	• Mastery of single-digit division facts and long division with single and multiple-digit divisors	

Epsilon	Fractions	• Four basic operations with fractions and mixed numbers • Simplifying fractions	
Zeta	Decimals and Percents	• Four basic operations with decimals and percents • Converting among fractions, decimals, and percents	
Pre Algebra	Preparing for *Algebra I*	• Positive and negative numbers • Positive exponents • Order of operations • Solving for an unknown	
Algebra 1* through *Calculus		• Titles are self-explanatory • List of topics for each level can be found in the Store section of our website	Our recommended sequence is *Algebra 1*, *Geometry*, *Algebra 2*, *PreCalculus*, and *Calculus*.
Stewardship, 2nd Edition†	Personal Finance or Consumer Math	• Biblical perspective of personal finances • Consumer math • Practical living skills	*Stewardship* encourages active communication between a parent/adult and a student to gain wisdom from experience. *Algebra 1* is a suggested prerequisite. Familiarity with exponential functions and/or algebraic equations containing exponents would be helpful but not required.

* This level is the only level not requiring complete mastery.

† Families doing so should consult their state laws and requirements as well as the requirements of any post-secondary institution your student may wish to attend regarding the appropriate application of Stewardship to necessary high school credits.

Why is *Geometry* recommended between *Algebra 1* and *Algebra 2*?

"When Should a Student Study Geometry?" can be found between the instruction for Lesson 35 and the solutions in the *Algebra 1* Instruction Manual.

Algebra 1 is the standard introduction to high school math. After you have completed *Algebra 1*, students can proceed to either *Geometry* or *Algebra 2*.

Traditionally, Math-U-See has recommended that a student complete *Geometry* before taking *Algebra 2*. *Geometry* may be more comfortable for students who prefer more review, as algebra is often included on the Systematic Review pages. In addition, some of the tests in *Algebra 2* (which assumes that the student has finished *Geometry*) contain problems that deal with geometric concepts. If a student completes *Algebra 1* and then *Algebra 2* in sequence, they will need to skip these problems and possibly come back to them after finishing the *Geometry* course. These review problems will compose the last five problems of the lesson tests in *Algebra 2*.

This said, there is no reason why a student cannot move directly into *Algebra 2*, especially if they are planning on taking the new SAT. (The ACT has not changed its format significantly and will accommodate either sequence of courses.)

THE SUGGESTED 4-STEP MATH-U-SEE APPROACH

In order to help students become confident problem solvers, here are the four steps that we suggest the instructor use to get the most from the Math-U-See curriculum. (The following is a reproduction of the "How to Use" section located in the front of each Instruction Manual.)

Ancient proverb: *Tell me; I forget. Show me; I understand. Let me do it; I remember.*
To this, we add: *Let me teach it, and I will have achieved mastery!*

Step 1	**Prepare for the Lesson**	• Watch the video lesson to learn the new concept. • Demonstrate this concept with the manipulatives when applicable. • Study the written explanations and examples in the Instruction Manual.

Step 2	**Present and Explore the New Concept Together**	• Present the new concept to your student.
		• Have your student watch the video lesson with you.
		• The following method should happen interactively:
		  • **BUILD:** Use the manipulatives to demonstrate and model problems from the Instruction Manual. If you need more examples, use the appropriate Lesson Practice pages.
		  • **WRITE:** Write down the step-by-step solutions as you work through the problems together using manipulatives.
		  • **SAY:** Talk through the why of the math concept as you build and write.
		• Give as many opportunities for your student to build, write, and say as necessary until your student fully understands the new concept and can demonstrate it to you confidently.

Step 3	**Practice for Mastery**	• Using the lesson practice problems from the Student Workbook, have your student practice the new concept until they understand it. • Together, complete as many Lesson Practice pages as necessary (not all pages may be needed) until your student understands the new concept by demonstrating confident mastery of the skill. • To demonstrate mastery, your student should be able to teach the concept back to you using the Build, Write, Say method. • Give special attention to the word problems, which are designed to apply the concept being taught in the lesson. • If your student needs more assistance, go to MathUSee.com to find review tools and other resources.

Step 4	**Progress After Mastery**	• Once mastery of the new concept is demonstrated, advance to the Systematic Review pages for that lesson. These worksheets review the new material as well as provide practice of the math concepts previously studied. • If your student struggles, reteach these concepts to maintain mastery. • If your student quickly demonstrates mastery, they may not need to complete all of the Systematic Review pages. • The last Systematic Review page for each lesson is followed by a page called "Application and Enrichment." These pages provide a way for your student to review and apply their math skills in a variety of different formats. • The instructor may decide how useful these activity pages are for a particular student. • Now you are ready for the lesson tests. These were designed to be an assessment tool to help determine mastery, but they may also be used as extra worksheets. • Your student will be ready for the next lesson only after demonstrating mastery of the new concept and maintaining mastery of concepts found in the Systematic Review worksheets.

Mastery

Math-U-See is a mastery-based approach. Our desire is for students to master each new concept of a lesson before moving onto a new lesson. If a student has mastered the concept, they will be able to explain how the problem is solved, why each step is important, when to use the concept, and how to teach it back to the parent/teacher. Students can think of the concept and accurately apply knowledge to word problems. The result of mastery is that a student will know how to solve a problem even if the formula is forgotten or not memorized. This approach is designed to give the instructor a clear understanding of when a student is ready to move to the next lesson. The primary goal of the mastery approach is to help produce confident problem solvers who enjoy the study of mathematics. The reason we study math is to be able to apply what we have learned to everyday situations.

Length of a Lesson

This will vary from student to student and from topic to topic. You may spend a day on a new topic, or you may spend several days. There are so many factors that influence this process that it is impossible to predict the length of time from one lesson to another. Students can spend three days or three weeks on a lesson. If moved from lesson to lesson too quickly without demonstrating mastery, your student may become overwhelmed and discouraged as they are exposed to more new material without mastering previous topics. If moved too slowly, your student may become bored and lose interest in math. We believe that as a

parent/teacher regularly spends time working along with their student, they will sense the right time for their student to take the lesson test and progress through the book.

The Build, Write, Say Method

The Math-U-See curriculum's Build, Write, Say method first involves building, or modeling, the concept with the manipulatives. Then the corresponding symbols for the model are written to make the connection to the abstract. Finally, the teacher or student "says" (explains) what has been built and written, further solidifying the understanding by associating appropriate and accurate language with the mathematical symbols.

Standards

Demme Learning wants to make sure that students using our program are able to hold their own when taking standardized tests, seeking college admission, or applying for jobs. Therefore, it is important that we review what is current in the field of education so we can be aware of what students are expected to know. Many of the updates and changes to the Math-U-See curriculum have been requested by parents who wanted their students to be exposed to those topics.

Common Core

To maintain the fundamental pedagogy and structure of the Math-U-See curriculum, mastery of concepts that have been added to meet Common Core standards is not required for progression. However, students may find these topics interesting, and they may be helpful to those students who need to take standardized tests.

The basic pedagogy, methods, and sequence of the Math-U-See program have enabled students to be successful in math for over 20 years and should not be changed. Many of the topics covered by the Common Core State Standards are already covered in the Math-U-See Curriculum, although not in the same order or using the same methodology.

The 2012 editions of Primer through Zeta were therefore revised as follows:

- More teaching tips and more detailed definitions were added to the Instruction Manuals.
- Application and Enrichment pages were added or revised to include Common Core concepts that were not in the existing Math-U-See program. (In some levels, appendices were also added.)

Because the way in which some concepts are presented differs from the Common Core, families who want their students to master these concepts should obtain test preparation material from their individual states to make sure the student is comfortable with the presentation and the vocabulary.