MATH LESSONS FOR A LIVING EDUCATION

Teaching Companion

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"Have not I commanded thee?
Be strong and of a good courage;
be not afraid, neither be thou dismayed:
for the LORD thy God is with thee
whithersoever thou goest" (Joshua 1:9 KJV).

As a homeschooling mom and author, **Angela O'Dell** embraces many aspects of the Charlotte Mason method, yet knows that modern children need an education that fits the needs of this generation. Based upon her foundational belief in a living God for a living education, she has worked to bring a curriculum that will reach deep into the heart of home-educated children and their families. She has written over 20 books, including her history and math series. Angela's goal is to bring materials that teach and train hearts and minds to find the answers for our generation in the never changing truth of God and His Word.

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Dedication: To all of the parents who are answering the call of God to educate their children at home. I am so very proud of you. *Soli Deo Gloria*.

Also dedicated to the Author and Sustainer of all things, Jesus Christ, the Word Who became flesh to dwell among men, through whom all of us have the privileged ability to approach the very throne room of God.

"If Jesus were to release His sustaining power, even for a moment, our universe would fly apart in chaos. The only reason math works is because Jesus created it from His mind of order and precision. Randomness and chance never produce predictable constancy and accuracy."

—Israel Wayne, *Education: Does God Have an Opinion?*

Start Here

Important Note to the Homeschool Parent

Dear Homeschooling Mama, Dad, or Grandparent, welcome!

When I decided to make this resource for you, I wanted to make sure I was giving you useful and practical teaching tips that would help make your day run more smoothly. I know from experience how foggy a mom's brain can get when she's juggling multiple children at various levels of development. I also wanted this little book to be comforting to your soul, a voice of truth and peace to help calm any jitters you may have about your own personal journey of learning to facilitate your child's education. I don't want you to try to keep the pages all clean and neat; this book is meant to be used as a resource…one which will eventually sport worn and highlighted pages, marked by a hundred colored tabs and dog-ears.

So here is what I want you to do: wait until your children are napping — or better yet, down for the night, pour yourself a cup (mine's coffee, although tea may be better in the evening), put your feet up, and take some time to walk with me through this book. **Please keep in mind that it would be highly beneficial — and make more sense — to read this book in its entirety instead of jumping ahead to a specific section.**

Before we begin our journey through the rest of this *Companion*, there is one general topic I want to talk to you about right at the beginning — something about which I hold a strong conviction.

The secular worldview has drilled into our heads and hearts that we as parents do not have what it takes to teach our children. I will go into depth about how we can stand against this mindset in a later section of this *Companion*, but for now, I want to outline my personal convictions concerning home education and my role in your life. I know from experience that as human homeschooling parents, it is easy for us to always be looking for a foolproof approach — a guarantee that our efforts are going to pay off and that we will not fail in our colossal efforts. We all have the constant reminder in the back of our mind that "the rest of the world" is just waiting for us to screw up and prove them right.

Many of us deal with such insecurity in our own abilities that we latch on to someone who seems to have at least most of the answers. I'm speaking from experience here. I spent years thinking that if I could just hook my wagon to a "shooting star" curriculum or educational method, I would be safe — I would be guaranteed a decent outcome. Thus, I spent years being dedicated to the cause of not failing. I allowed the fear of failure to make my decisions, I allowed the pursuit of validation to be my focus, and I let my insecurity set the tone of my life and the atmosphere of my home.

I have to be honest with you; in recent years, I've become increasingly concerned about how easy it is for us to use social media in this humanly natural pursuit of validation. I'm going to tread lightly here… I don't want to make social media out to be a villain, because the issue truly is a heart thing. Therefore, I do want to boldly challenge all of us to allow God to examine our hearts. Do we spend time on social media platforms in either of these two ways?

Number one: Have we turned our social media into a reality tv show, starring us? Do we live differently than if there were no cameras, no "go live" button, and no way for us to show the world how cool we are? Are we using it as a way to find significance and validation?

Number two: Do we go to certain people on social media for reassurance that we are good enough? Do we go "bask in the glow" of someone we think has it all together and then try to be like them?

I know that these are hard questions, and the very nature of social media is, in many ways, an invitation to congregate on the "platform of fake." I want to challenge all of us to stay authentic and plugged into our real lives with the real people God has given us to disciple. Our entire friends list doesn't need to give us a constant thumbs up about our lives; we are here to please God.

I'm going to make a bold statement because I have made a covenant with God to remain in this position: I do not write, speak, or advise to gain a following. I want you to be my friend and fellow homeschool parent, not my "follower." I want us to be fellow followers of Christ, brothers and sisters, children of the Almighty God, and co-workers in the Kingdom work to which God has assigned each of us.

In fact, it is my goal to consistently work myself out of a job. If I encourage you to continually come back to sit at my feet for advice and tips, I'm not doing you any service at all. I want to give you the kind of help, tips, and encouragement that sends you on your way, into your own life, with Biblical confidence that you can do this, because God has called you to do it. And He, not I, will give you the strength and wisdom that you need to face the challenges in your life. If my words do not lead you to Him, then I do not want you to read them. I am human, and even if I try really hard, I will let you down, because I am fallible. I do not have all the answers to your problems. What I do have, I give to you freely, but your heavenly Father is the only source of truth, peace, divine wisdom, and true joy. Let's promise each other that we will go to Him together and walk through life in His strength.

Always remember that you are being divinely equipped to educate your children. As a homeschool mom myself, I know how important it is to remember on a daily basis that we are all being homeschooled by God. He is the One who created your family, and He is proud of your obedience and your effort. You are not alone; He sees you, He knows you, He loves you, and He is with you. He did not call you to do this and then leave you to figure it out on your own and complete the assignment in your own strength. You are part of a much bigger story than you could ever imagine. What you do matters. All those holes left by our human weakness are a perfect showcase for God's grace and glory. May we all face each day with a heartfelt *Soli Deo Gloria*.

Imitate God, therefore, in everything you do,
because you are his dear children.
Live a life filled with love,
following the example of Christ.
He loved us and offered himself as a sacrifice for us,
a pleasing aroma to God (Ephesians 5:1-2).

Part 1

Understanding the Method and Approach of *Math Lessons for a Living Education*

Section #1: The Biblical Worldview Method in Math:

We, as a culture, have been persuaded into thinking that only the professionals are able to educate and socialize our children. As parents who have chosen to home educate, we know that this is simply not true. The more I've studied this phenomenon, the more I have come to realize that much of it is rooted in the secular worldview that discounts God and the divine sanctity and strength of family relationships. We have been taught that teaching our children academic subjects requires a separate sphere of intelligence and ability than teaching them how to speak, walk, and go potty; that this ability is not found in the common, untrained parent — the category into which most of us fall. Because of this, even in the homeschool world, there is a large amount of curriculum with classroom-style, overly-complicated, scripted "teaching instructions" that has allowed the "experts" to teach our children through us, instead of trusting the Holy Spirit to lead us and give us wisdom for guiding our specific children in our own unique home education setting. (James 1:5)

We are led to believe that teaching elementary math and language concepts is in the same league as rocket science, even though we all use these concepts on a daily basis without even thinking twice about it. We are told that our children, regardless of their uniqueness, can only learn through certain types of activities, which follow mysterious scopes and sequences (known only to the "professionals"), at a specific time in their lives. Thus, we the parents — the very ones that God chose before the creation of the world to be the nurturers, disciplers, shepherds, and teachers of our children's minds, hearts, and souls — shuffle through the cold cloud of insecurity and fear that we are going to mess our kids up, let them down, and cause them to be behind some arbitrary standard. This is the cultural stronghold we homeschooling parents face on a daily basis, and we need to constantly and consistently remind ourselves and each other that we have truth on our side.

Let me assure you: nowhere in God's Word does it mention that children should be taught by someone who cares little to nothing about their spiritual development or eternal purpose. Nowhere is it written that every child needs to perform and be measured by manmade schedules, standards, and scope and sequences. On the contrary, in the Bible, all instructions about children are built first and foremost upon their spiritual development as the foundation. And these directives are primarily aimed at the parents (with an occasional mention of grandparents). As homeschooling parents, we understand this; in many cases, this is the underlying reason for our decision. However, most of us have a hard time breaking loose from the cultural mold that has trained us to believe that we are not capable of implementing it in our own homes, and, at the same time, produce children who are equipped to live in our current culture.

In the ancient days when God called His chosen people, He gave them clear instructions on how to raise and train their children with an education centered on their spiritual development. These directives are still extremely pertinent to us today. You are probably familiar with them — they are called the *Shema*, and we can find them in Deuteronomy 6:4-9. The *Shema* is the divine prescription to us as godly parents to raise our children to be healthy, grounded adults who have a solid view of who God is, who they are, and how to interact with the world around them.

I boldly challenge us all to believe this. If we follow it, the truth in these Scriptures will replace the lies

about what the world calls "education," and we **will** raise children who are ready to stand strong in this current day's culture. They will be in the world but not of it. This is the Hebrew model (not method) of education; it is centered around reaching the heart of the child with the goal of training them — body, mind, and spirit — in a godly, biblical worldview in every subject, including math. We are called to be disciples of Christ — students of His ways, His Word, and His Gospel. As parents, we are required to model this for our children.

I believe that a good curriculum teaches the whole child, but an excellent curriculum is a discipling tool that guides, reassures, and supports the parent and reaches the heart of the child, pointing the whole family to Christ. This is the foundational goal for the *Math Lessons for a Living Education* series. The entire series is meant to be a tool for you to help you raise, train, and teach your children in the way they should go.

This may sound overly dramatic, but in many ways, I feel like God has called me to work (alongside several others, including Katherine Loop Hannon, author of the *Principles of Mathematics* series) in one of the last frontiers of home education: *Math*. For decades, homeschooling families have been aware of the worldview presented in every other subject. They have been teaching apologetics in science, God's hand in history, and glorifying Him through reading and writing. And there, on that lonely shelf, very often surrounded by contempt, is math. It does not have to be this way.

Teaching and learning math isn't only about number concepts; no subject is ever just about gathering information into the brain. It's about bringing glory to God in every area of life. It's about seeing Him as an integral part of every aspect of the universe.

Being educated is not a distant goal that we are striving for; it's in the process of learning to learn — the growing and becoming who God created us to be, day after day — that we become truly educated. This process is not something that humans can regulate or control with their lists and standards, it is encoded in our very being — our made-in-the-image-of-God DNA.

Section #2: "Good-brain"* Math

Many of us grew up with math curriculums that made us mad. Quite honestly, I disliked math as a small child — I should say, I disliked the math curriculum that I was made to do in those years. The endless pages of repetitive equations seemed like they were designed to drive me out of my mind. I remember feeling like whoever wrote those books strongly disliked children (and had never been one themselves) and had designed the lessons in this way in order to trick the tired student into making a mistake. I truly was convinced that it was a rigged system. This was "bad-brain" math. It sent me into a negative thought cycle. I did not truly understand this phenomenon until I was older and studying the effect that negative thinking has on our learning ability and experience.

Since the death of my own dad, with whom I shared a special bond, I have had the privilege of being mentored by several very godly men who have become like my spiritual fathers. One in particular has helped me to understand the importance of being a "good-brain" person in my children's lives. This mentor, Professor Gary Newton, is a pastor, a professor of Christian family life and discipleship ministries, an author, speaker, and profoundly insightful life and leadership coach. Gary's book, *Heart-deep Teaching*, made a powerful impact on me, swinging my attention away from my own agendas and fear of failure and towards creating a learning environment that facilitated a positive, "good-brain" educational experience.

Dr. Newton and I had many long discussions while I was creating the original editions of *Math Lessons for a Living Education*. In one of the most profound conversations I had with him, Dr. Newton told me that the most successful and outstanding students

* The term "good-brain" is borrowed from my friend, Randy Pratt of Master Books.

in his college classrooms are the ones who have been encouraged to make a relationship with their education — in *every* subject. These are the ones that had been taught to approach their education with determination to develop their critical and creative thinking abilities.

He also told me that he could tell which students had spent their lives filling in the blanks and being taught to the test. These students struggled to think outside the box; they did not do well in figuring out how to deal with unexpected disturbances in life and tended to be followers instead of leaders. They were stuck in what I call the "bad-brain" learning mode, with underdeveloped brains.

I believe firmly that we are all called to be "good-brain" people in our children's lives…encouragers, allies, and high-standard-holders. Our kids need to know that the potential for greatness is in them because they are created in the image of God. They need to learn to see their education as an exciting adventure — a private journey between them and their Creator. We need to instill the truth of the greatness and accessibility of God so they don't doubt that He is waiting for them to come to Him so He can show them the good plan He has for their lives. We, as parents are the guides for them on this journey. I believe that the more we build our personal relationships with God first, the relationships with our children that show them the way to God will naturally follow. Luke 6:40 (NKJV) says, "A disciple is not above his teacher, but everyone who is perfectly trained will be like his teacher." We cannot expect our children to be something that we are not modeling for them.

When I wrote *Math Lessons for a Living Education*, one of my central goals was to create "good-brain" math. I wanted parents who had lived through a "bad-brain" math experience in their own childhood to be able to learn alongside their child with no judgment or condemnation that they "should already know it" or that "they stink at math." I believe with all of my heart that if we can keep ourselves and our kids out of the "bad-brain" approach to learning, our educational journey will be substantially easier and more successful.

Is *Math Lessons for a Living Education* different than anything else you've seen or experienced?

I sure hope so.

Section #3: Goals and Objectives

My goals for *Math Lessons for a Living Education* are simple and straightforward:

- To demystify teaching and learning elementary math, to nurture the love of learning in the child, and to encourage the confidence to teach in the parent(s)
- To give children a firm foundation in math concepts that will serve them for the rest of their lives
- To give families a tool for learning and growing together at the speed and in the style that fits their needs
- To encourage the child to connect with their learning journey and help them to become life-long learners
- To be a good-brain person in your child's life and in your life… cheering you on and pointing you to Jesus

Section #4: Scope and Sequence Chart

Notes about *Math Level K* are included after the chart for Math Levels 1 - 6.

Lesson #	Math Level 1	Math Level 2	Math Level 3	Math Level 4	Math Level 5	Math Level 6**
1	Numbers 0 - 9	*Place Value Village, Telling Time, Shapes & Patterns	*Review of Place Value, Odds and Evens, Counting by 2, 5, and 10	*Review of all Addition and Subtraction Concepts	*Review of all Addition and Subtraction Concepts	Working with Whole Numbers
2	Numbers 0 - 9	*Addition, Horizontal & Vertical, Shapes	*Review of Money, Clocks, Perimeter, Addition/ Subtraction Facts	*Review of Place Value, Estimation, and Rounding	*Review of all Division and Multiplication	Whole numbers in the Real World
3	Introducing Rectangles	*Subtraction	*Review of Addition, Including Carrying, Tally Marks	*Review of all Multiplication	*Review of all Geometry	Averaging, Rounding, and Roman Numerals
4	Circles and Patterns	*Writing Numbers to 100, Simple Fractions	*Review of Subtraction, Including Borrowing Concepts	*Review of all Division	*Review of all Measurements	Fractions
5	Review of Concepts	Introducing Word Problems	*Review of Measurement, Fractions, Thermometers/ Graphs	*Review of all Fractions and Measurement	Review of all Fractions Concepts	Working with Factors
6	More Numbers, Patterns, Shapes - Introducing Triangles	Skip Counting Using Dimes and Nickels, Minutes on the Clock	*Review of Word Problems	*Review of all Roman Numerals and Shapes	Review of all Decimal Concepts	More about Fractions / Mixed Numbers
7	Bigger Numbers/ Place Value	Skip Counting by 2, Even and Odd Numbers	Introducing Column Addition/Larger Numbers	Fraction Concepts: Adding and Subtracting Like Denominators	Multiplying and Dividing by 10, 100, 1,000	Using Factors and Multiples in Operations
8	More Work with Place Value	Addition: Double Digit Plus Single Digit	Introducing Larger Number Subtraction	Multiplication with Carrying Using 11s and 12s	Introducing 2-Digit Divisors	Review of Fraction Concepts

* Indicates review lessons - concepts in previous levels. Additional optional teaching instruction included in this *Teaching Companion*.

** *Math Level 6* follows a slightly different design than *Levels 1-5*. *Levels 1-6* have 180 days' worth of work, while *Math Level K* is set up on a 3 day/week schedule, with 2 optional days to create an alternative 180-day schedule. The Lessons in *Math 6* cover more than five days in the schedule to create 180 days.

Lesson #	Math Level 1	Math Level 2	Math Level 3	Math Level 4	Math Level 5	Math Level 6**
9	Review of Concepts	Addition - Double Digit Plus Double Digit	Introducing Rounding to the 10s and 100s	New: Measurements and Geometric Concepts	More Work with Division	Adding and Subtracting Fractions and Mixed Numbers
10	Place Value/ Patterns of 10s	Review of all Addition Concepts	Adding and Subtracting Larger Amounts of Money	Review of all New Concepts	Three ways of Division/ Remainders as Fractions	Multiplying and Dividing Fractions
11	Practice with Patterns and Shapes	Introducing Measurement/ Inches, Feet, Review Time & Shapes	Review of all New Concepts	Steps of Division/Single Digit Divisor, No Remainder	Review Week	Comprehensive Review of all Advanced Fractional Concepts
12	Introducing the + and = Symbols	Introducing Perimeter	Introducing Multiplication of 0, 1, 2, and 5	Number Grouping/ Understanding Larger Multiplication	Factoring	Decimal Basics
13	Addition +1	Telling Time to the Minute	Introducing Division of 1, 2, and 5	More about Division Including Checking Division	Common Factors, Greatest Common Factor, Reducing Fractions	More Work with Decimals
14	Writing and Adding Numbers/ Intro: Days of the Week	Place Value Village Practice/ Place Value to the Thousands' Place	Introducing Multiplication and Division of 10	Division with a Remainder (Single Digit Divisor)	Proper and Improper Fractions	Using Decimals in the Real World
15	Vertical Addition	More Work with Subtraction	Introducing Areas of Rectangles and Squares	Metric Unit of Measure	Working with Improper Fractions	Percents
16	Introducing Squares	Introducing Addition with Carrying to the Tens' Place	Introducing Multiplying and Dividing by 3	Review of all New Concepts	Sums Containing Improper Fractions	Using Decimals and Percents in the Real World / Savvy shopping

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Lesson #	Math Level 1	Math Level 2	Math Level 3	Math Level 4	Math Level 5	Math Level 6**
17	Two by Two / Skip Counting by 2s	Introducing Subtraction with Borrowing from the Tens' Place	Taking Fractions Deeper	Introducing Mixed Numbers / Adding and Subtracting with Like Denominators	Least Common Multiples	Comprehensive Review of Fractions, Decimals, and Percents
18	Number Families, Addition to 10	Review of Regrouping Concepts	Multiplying and Dividing by 4	Introducing Equivalent Fractions Through Pictures	Least Common Multiples/ Finding a Common Denominator	Geometry
19	Counting by 10	Understanding Dollars and Cents, Writing Money Terms	Multiplying and Dividing by 6 and 7	More About Equivalent Fractions	Review of all New Concepts	Maps! Just Follow the Lines
20	Counting Groups	Review of Money	Multiplying and Dividing by 8 and 9	Larger Number Multiplication with Carrying	Adding Fractions with Uncommon Denominators	Graphs and Charts
21	Solving for an Unknown	Introducing Thermometers and Other Gauges	Review of all New Concepts	Review of all New Concepts	Subtracting Fractions with Uncommon Denominators	Units of Measurement
22	Tally Marks to Make Groups of 5	Reading Bar Graphs and Line Graphs	Rounding to 1000s and Estimation	Writing Decimals and Fractions	Subtracting Mixed Numbers with Carrying & Borrowing: Common Denominators	Additional Topics
23	Counting by 5s	More on Measurement: Pounds, and Ounces	Higher Place Value Through Millions	Money Work with Decimals and Fractions	Adding Mixed Numbers with Carrying: Uncommon Denominators	
24	Telling Time #1	More Measurement Concepts: Gallons, Quarts, Pints, Cups	More Measuring Concepts	Relationship Between Fractions, Decimals, and Percents	Subtracting Mixed Numbers with Borrowing: Uncommon Denominators	
25	Telling Time #2	Review of Measurements	Introducing Solving for Unknowns	Geometry	Review!	

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Lesson #	Math Level 1	Math Level 2	Math Level 3	Math Level 4	Math Level 5	Math Level 6**
26	Telling Time #3	Adding Money - No Regrouping	Introducing Inequalities	More Geometry	Multiplying Fractions	
27	Introducing Simple Fractions #1	Subtracting Money: Making Change	Review of all New Concepts	Review of all New Concepts	Divisibility Rules and Dividing Fractions	
28	Introducing Simple Fractions #2	More Work with Word Problems	Addition and Subtraction of Larger Numbers	Work with Charts and Graphs	Multiplying Decimals	
29	Introduc-tion to Sub-traction	More Work with Telling Time	Introducing Roman Numerals	Constructing Charts and Graphs	Hands-on! Counting Back Money	
30	Subtraction -1	More Work with Measurements	More About Roman Numerals	Introducing Averaging	Review of all Division	
31	Review of Shapes	Review of Place Value Through the Thousands' Place	Review of all Addition and Subtraction Concepts	Review of all Addition and Subtraction	Review of all Division	
32	Review of Place Value: to 100	Review of Word Problems: the Steps of Solving	Review of Rounding, Estimation and Place Value	Review of all Multiplication and Division	Review of Factoring, Common Factors, and Greatest Common Factors	
33	Review of Addition	Review of Adding and Subtracting: Double-Digit Problems	Review of Multiplication	Review of all Geometry	Review of Fractional Concepts #1	
34	Review of Skip Counting, 2s, and 5s	Review of Money Concepts	Review of Division	Review of all Measurement	Review of Fractional Concepts #2	
35	Review of Skip Counting 10s and Tally Marks	Review of Time and Temperature	Review of all Measurements, Fractions	Review of all Fractional Concepts	Review of Multiplying and Dividing Fractions	

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Lesson #	Math Level 1	Math Level 2	Math Level 3	Math Level 4	Math Level 5	Math Level 6**
36	Review of Numbers to 100	Review of Addition and Subtraction Fact Families	Review of all Roman Numerals and Shapes	Review of all Decimal Concepts	Review of Multiplying and Dividing Decimals	

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Math Level K:

The focus of *Math Level K* is early childhood development that is needed for *Math Level 1* and up. Many children in this age bracket are almost cognitively ready to begin learning the actual number concepts but need a little extra time to develop the motor skills necessary to perform many of the tasks included in *Math Level 1*. For these young ones, it is crucial that they have the opportunity to build the necessary prerequisite skills before they begin their acquisition of the more advanced small motor skill activities. You will find that *Math Level K* helps the young child to learn skills such as understanding directional concepts (left, right, first, last, next, etc.), recognition of basic shapes and colors, one-to-one matching, and beginning numeric recognition and understanding.

Through the well-loved stories (including the long-asked-for prequel of the story of Charlie and Charlotte!) and hands-on activities *Math Lessons for a Living Education* is known and loved for, young children will learn by leaps and bounds and be well-prepared for the next step of *Math Level 1*. *Math Level K* is written to coordinate with the new Master Books Kindergarten curriculum, *Simply K - a Developmental Approach to Kindergarten* by Carrie Bailey (who is also the co-author of *Math Level K*). By using both *Math Level K* and *Simply K*, you can give your child an enjoyable and thorough foundation on which to build their elementary education.

Part 2

Teaching *Math Lessons for a Living Education*

Section #1: Making *Math Lessons for a Living Education* Work for You

Using *MLFLE* as a Tool

Math Lessons for a Living Education is an out-of-the-box curriculum, which, instead of forcing the child to complete pages of drills, asks them to develop the communication between their creative and critical thinking skills in brain-growing ways. Because of this unusual approach, I am often asked if it is enough to be a complete curriculum on its own. The answer is a resounding, "yes." Elementary students do not need to spend an hour "doing" (our school word for writing and memorizing formulas) math problems; they need to actually have time to play with the concepts that they are learning. Children need to play to learn; in fact, it's been said that playing is a child's work. Children need to be allowed to take the concepts that they have heard and seen and be able to internalize them through play. As they get older, children turn their play into other types of creative thinking. Thus, play is the foundation of both creative and critical thinking.

Now, of course, this doesn't mean that your child needs to have their seatwork time, working on their math lesson, plus a structured half-hour of "playing to internalize the concept" time. It simply means that we, as the parent-teacher, need to not take up all of their time with structured instruction. Charlotte Mason called this practice "masterly inactivity." This approach of having a balance between involvement (the teaching and discussing) and allowing for the development of thought, allows the teacher to encourage the child to own their education at a very young age. You will see that in *Math Lessons for a Living Education*, I have included many interrelated projects to bring a playful, hands-on aspect to the program and to help the parent and student to transition into more of an out-of-the-box way of thinking.

You are going to see and hear me say the words "the communication between creative and critical thinking" many times in this *Companion*. This is because, contrary to what you might have been told, creative and critical thinking walk hand-in-hand; one is not complete and competent without the other. Although they may come from different physical parts of your brain, they are absolutely interwoven and intertwined in practice. You simply cannot have well developed critical thinking skills without having well developed creative thinking skills, and vice versa. This is perhaps evidenced in the study of math more than any other discipline. For example: think about solving a word problem. Many people do not like word problems because they feel lost in the information. Their left brain says, "Way too much fuzzy information going on here," and their right brain says, "Not happening! Far too many numbers and too much logical thinking required!"

Anyone can learn to become efficient at solving word problems by developing the ability to mentally see the situation described by turning it into a picture (right side work). They can then organize the numeric information being given into a logical mental display (left side work). Next, they can ask themselves, "What is the question I'm trying to answer? What is the missing information?" (left side work). After determining the question, they can then choose the operation(s) needed to find that answer (left side work). Finally, they can use their pictured, organized information to plug in those operations to find the missing information — the answer to the word problem (left and right side working together).

If we do this often enough, we can train our brains to approach word problems like a puzzle. This process takes both creative thinking and critical thinking working together. Most people are not taught to approach math with a creative mind, but the truth of the matter is this: our brains were not meant to be used one side at a time. The left side may be analytical, but the right side has to do the expressing of that analytical thought. We need to help ourselves and our children to train our brain hemispheres to work together.

Adapting for Cognitive Ability and for Your Unique Child

First and foremost, ask for divine insight and wisdom to see what you need to do to best adapt to your child's ability and learning style, and then learn to trust that insight and wisdom. (James 1:5)

Math Lessons for a Living Education was written in such a way to be extremely adaptable to the individual student's ability. If your student is grasping the concepts at a faster rate than the lessons are laid out, please allow them to advance at their own speed. Chances are that they will slow down at some point when they encounter a concept that takes them a bit longer. On the other hand, don't fall into the trap of comparison and worry. I am learning that both of these are fueled by fear and pride, neither of which are from God. (Proverbs 16:18 - Pride)(2 Timothy 1:7 - Fear)

For special needs students, please use this curriculum as a tool in whatever way you need. I suggest reading the stories together and working through the problems together. Work as slowly as your student needs. I have known many special needs children who took 8 to 10 years to complete the entire scope of the math series. By the time they were finished, they were able to learn how to keep a checkbook and take care of their own finances. Don't forget, the concepts covered in these books are the most commonly used math concepts we all use in everyday life.

For advanced students, my only warning is to make absolutely sure that your student can narrate to you the steps of the concept and why they are

doing them. Many students are deemed "good at math" because they have become proficient in "monkeying" and filling in the blanks. The success of actually being able to understand math in real life is based on being able to understand the when and why behind it. I have seen numerous cases where a mother will say, "My child gets it but doesn't like to narrate the process of why they are doing it, so I just let them fill in the blanks and do the work in their book."

Please Understand:

- Your student, no matter their learning style, needs to be able to articulate their thoughts. In the discipline of writing, they need to be able to articulate in complete sentences. In math, they

need to be able to articulate why they are doing what they are doing. This is not just about writing or math, this is about logical and critical thinking and being able to process through the steps of being able to output what is in their brains. I do understand that this can be a painful process and therefore have given you tips in Part 2, Section 5 for helping them through this process and understanding oral narration in math. (Please read the note at the end of the previous section about critical and creative thinking.)

- Although *Math Lessons for a Living Education* is not written to meet an arbitrary grade level guideline, because there are seven volumes, it makes sense that they will fall approximately in the same age range as all other math curriculums written to be specific grade levels. However, *please* do not approach this math series like all others. Allow your student's ability to show you where to place them. If entering this series from another curriculum, please give your student the readiness test which is available in the back of this book. You can also download the test at MasterBooks.com.

Adapting *Math Lessons for a Living Education* for Learning Styles

Math Lessons for a Living Education was crafted to include each of the learning styles.

- **For visual learners**, the bright colors, graphics, and pictures will be helpful in their learning journey, as will the plentiful amount of white space on the pages. There is also the probability that visual learners will want to read the story to themselves. It has been my experience that visual learners become independent a bit faster than other types of learners. Visual learners tend to have high visual comprehension levels that lend themselves to being able to read and understand instructions and story problems (of course, this may or may not apply to your visual learner). Make sure that you are connecting with your visual learner to make sure that they can verbally explain what they are doing. Visual learners tend to be good at fill-in-the-blank. You may also find that your visual learners move more quickly through the levels of learning, from the need for hands-on manipulatives to the ability to work problems in their heads. Many times, visual learners have a harder time than auditory learners in expressing and articulating the concepts and processes they have learned.
- **Most auditory learners** need to hear the story, directions, and story problems. Two of my kids are auditory learners, with my youngest child being an extreme case. She is so auditory that we have to work hard to build visual comprehension. Auditory learners may want to read the story, instructions, and story problems aloud. I allow my young auditory learners to read everything out loud, or I read it to them. Also, auditory learners tend to need discussion and interaction more than visual learners do. They need to be able to talk through the concepts and discuss each of the steps. Auditory learners are generally more naturally fluent in their oral narration abilities.

- **Kinesthetic learners** retain best by getting actively involved in their learning process. A simple way to turn any math concepts and lessons into a more active learning experience is to allow your student to change the way they approach their lessons. For example, sitting on an exercise ball or standing up while doing their math work can change how the brain functions. This is why I suggest that your child use a whiteboard to do some of their work. Many kinesthetic learners have a hard time

sitting still during their studies and so are often deemed "wigglers" and "fidgeters." These kiddos truly need to "move and shake" in order for their brains to take in and process their sensory input. Several of my kids benefitted from "thinking putty" that kept their hands busy while they were thinking.

- Of course, **most of us are a mixture** of at least two of the learning styles. If you are not sure what your child's learning style is, talk to them about it. Pay attention to what they are doing when they are concentrating. Take notes about their need to either see or hear the instructions. No matter what your child's learning style, always remember that we all retain best while using as many senses as possible. Note: many times children who are primarily auditory learners are also kinesthetic. They benefit greatly from discussion and interaction. On the other hand, it is quite common for visual learners to be better memorizers.
- Add hands-on, out-of-the-box practice, and application. In Part 4 of this *Companion*, I have included a list of ideas for learning math through games and other hands-on projects. For additional tips and ideas on teaching, please read the next section, General Teaching Tips.

General Teaching Tips

- **Always start with a review.** We all do much better when we start with something familiar and build on it. This can be done simply by quickly reviewing the previous lesson's concepts before moving to the new lesson's content.
- **Engage your student** in the lesson. Invite them to join in on reading the story, discussing the instructions, playing with the manipulatives, and memorizing facts. Interaction is the key to learning.
- **Encourage your child to ask questions.** You can't fill or pour from a pitcher that has a closed lid, and a child can't learn with their mouths shut. From a very early age, encourage your child to ask questions. Help them learn to ask good questions that have meaningful answers. If you don't know the answer, learn to research with your child to find the answers. If your child is older, start now. If your child is a toddler, start now.
- Keep a small container or an expand-a-file with several colors of index cards on hand. As you and your child are working through the concepts, **work together to make "study cards"** showing the breakdown of the concepts. I've even had my students demonstrate the concepts with manipulatives, while I took pictures of the process. Then, I printed the pictures and pasted them to the study cards. I have done this in every subject. A couple of my kids ended up with two large shoe boxes of study cards by the time they graduated.

- **Allow God to help you** deal with any anxiety that you may be experiencing. Your relationship with your Heavenly Father is the most significant deciding factor in your success as a homeschooler. Actively be establishing your own biblical God-view, worldview, and self-view. Be more concerned with your own diligence in seeking His daily direction than in keeping a schedule for your children's schoolwork. "But seek first the kingdom of God and His righteousness, and all these things shall be added to you" (Matthew 6:33 NKJV). I promise, if you seek His direction, He will lead you on paths of peace.
- **Pray for guidance and then trust that guidance.** Put blinders and earplugs on if you

need to keep from being distracted from that path (speaking from experience).

I have created *Math Lessons for a Living Education* in such a way that allows you as the homeschool parent to shine. My intentions for keeping lessons short and giving direction in becoming strong in critical and creative thinking are to allow you to have time to do what you can do best: guide your child in the way they should go, with God's help.

I highly encourage all parents, even ones who have been on this journey for a while, to schedule an afternoon or entire day — depending on how many children you have — to sit and think about each child. Give each one a whole page or two in your thinking journal (you could benefit greatly to have one of these if you don't already — a simple, single-subject spiral works great) and write down these questions to answer:

- What are our spiritual goals for this child?
- What are our character development goals for this child?
- What are our relationship goals for this child?
- What are our academic goals for this child?
- What are other areas where we need to be seeking divine wisdom concerning this child?
- What is the Scripture we will be praying over this child's life?

I am discovering that it is a lot harder to get deeply upset, angry, and pessimistic about someone for whom I am fervently and consistently praying. Frustration with a person can much more easily be replaced with beneficial thoughts and supplications when you have a practical and spiritual plan of action for that person.

Section #2: Teaching Place Value with Place Value Village

Constructing the Place Value Village (PVV)

Place Value Village is included in the Manipulatives Section of *Math Level 1-3*. To construct the village, simply cut out the houses, allow your child to color them (optional), laminate* them for sturdiness (optional), and attach them to some type of container. You can use any kind of container you want that will hold the counting items. I've seen moms use everything from stacking storage containers to large plastic drinking glasses. If you are wondering what the finished product should look like, follow the link below to see the tutorial I made for PVV. I do recommend having a basket or bin that is specifically for storing your Place Value Village, so you can keep all of the pieces together.

Using Counting Objects

Any type of small item can be used for teaching the Place Value Village. In the books, I suggest using dried beans because they are affordable, and they are easy for little fingers to handle; however, you can use any small item you want. In our family, when my older kids were young we used the beans, but my younger two were gifted a set of one thousand linking math cubes. Both the beans and the cubes worked great to help my kids understand place value. There isn't a specific small counting item that is going to help or hinder the learning process. Please feel free to use any small items you have in your house already or, if you would prefer, go buy some new ones.

Understanding the Learning Process of This Concept

Children will not completely understand place value the first time they are exposed to it. It is a concept that needs to be visited often over time.

* I have never owned a laminator, but I have used clear Contact Paper ™ to cover school projects like this. I've even seen some moms use clear page protectors. You can laminate the PVV houses in any way you want. There is no right or wrong way to do this.

Don't panic; this is normal and acceptable. You will probably discover that your child "gets it" sometimes, but not other times. This is also completely normal (human brains are funny like that - they work in 'spits and spurts'). Simply understand that you, as the teacher, are going to be working with and adding onto this concept very frequently while your child moves through the concepts covered in the *Math Level 1-6* levels.

There is a tutorial video for the Place Value Village at this link: https://angelaodellblog.com/2016/04/11/place-value-village/

If your student is balking over learning of this concept, explain to them that they are building a skill that takes a while to fully construct in the mind. It is most certainly not a one-time-and-you-have-it type of concept (actually, very few things in life are!). As their cognitive ability grows, so will their understanding of this concept. They are simply encouraged to do their best and practice often. Note: place value is certainly one of those concepts that requires critical and creative thinking to work together.

Likewise, **if they do understand** it at its simplest level, don't expect them to continue to understand it perfectly as they move up into the more difficult levels of the concept.

There will probably be times that they will have to slow down, go back, and reinforce the simpler levels before they can move on to continue building on it. It's perfectly fine if this happens. Needing to review is not a sign of failure on anyone's part — it is simply something that is required in the learning journey. Simply keep reviewing and moving forward.

Set aside planned days to focus on building place value understanding. Ideas: set up the Place Value Village on the table, use fun (and unusual) counting items, make a special treat to snack on, put some fun music on, etc. The idea here is to create a fun, festive atmosphere that is not ordinary.

Think of it this way: when you, as an adult, are learning a new skill or concept, you are constantly subconsciously thinking about what you know and then slowly adding to that base. Our kids are just finding out how they don't know everything, how to understand the world around them, how to build a little confidence through incremental growth and learning, and how to have a positive attitude about the learning process. They are not only learning the concept of a number, but they are also training their brain and building their character.

I have included **hands-on activities** in the Math Games section in Part 4 of this *Companion* to use in addition to the Place Value Village.

I have included a chart for you to use to take notes about your child's journey through the concept of place value. Because every child is different and will travel at their own rate, and because you know your child best, I want you to simply keep track of their journey. Remember, this is not about a goal of reaching comprehension at a certain time. This is about journaling about the journey. Relax and enjoy the trip.

Child's name	Notes About My Child's Learning Journey: Place Value			

We know as adults that the learning process can be fun, but it can also be humbling. We have to admit when we don't know how to do something and be teachable to learn it. This concept is huge for all of us, as it translates into the emotional and spiritual parts of our lives as well as the educational.

Section #3: Right-brain Flashcards

The Method and Objectives:

Right-brain flashcards are yet another creative-critical-thinking team player exercise. Honestly, a lot of kids (and parents) have a hard time with them. Because they are so "unusual and different" from other approaches, they cause an uncomfortable feeling or even plain old insecurity. I remember feeling all of the above. Once you understand why you or your child are feeling this way, it is much easier to address it and deal with it. It makes us uncomfortable because our brain's analytical left side doesn't want to have to communicate with the creative right side; it just wants to do its thing, fill in the answer and move on. Many times, the left side is not good at communicating and is even a little possessive of the more analytical and critical skills. According to our brain's left side, the right side is "hairbrained" or maybe even a lesser twin. The process might be painful at first, but it is oh, so beneficial. When we train our brain hemispheres to communicate, we are creating pathways between the two, which in turn strengthens the ability to reason and communicate fluidly in all areas of life, raising the level of our verbal aptitude and cognitive ability. Imagine that you are helping your child to train their brain hemispheres to walk together, each taking its turn instead of one side dragging the other or trying to exclude it completely. This is a discipline worth pursuing.

Right-brain flashcards help the student to memorize the whole fact by not allowing the student to see the equation with a blank for its answer. This is especially important for visual learners. (This is similar in concept to not allowing a child to see a word misspelled if at all possible. It is much easier to start with the correct spelling and the whole fact than to correct a wrong answer habit later.)

Right-brain flashcards do not have to be fancy. They can simply be the math fact, including the answer. You do not have to be super creative to make this type of study aid. If your child wants to make up a story for the fact they can, but this is entirely optional.

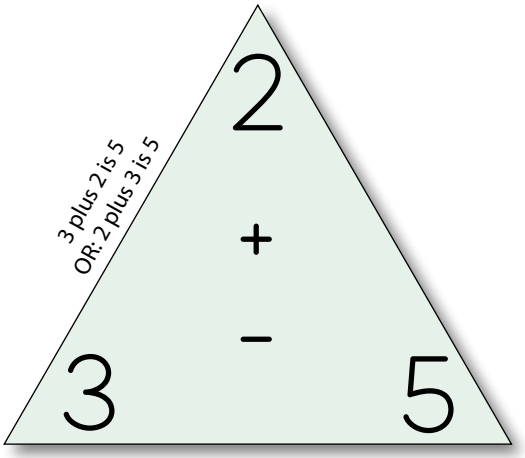
Right-brain flashcards can be horizontal, vertical or (for fact families) triangular. Study the samples of the addition/subtraction flashcards and multiplication/division flashcards below.

Please note: Subtraction is introduced in Lesson 29 of Math Level 1. Therefore, in *Math Level 1*, do not use the Triangle Flashcards for your right-brain flashcards.

$$2 + 3 = 5$$

$$\begin{array}{r} 2 \\ +\ 3 \\ \hline 5 \end{array}$$

Move your finger from one number to the next as you say it.

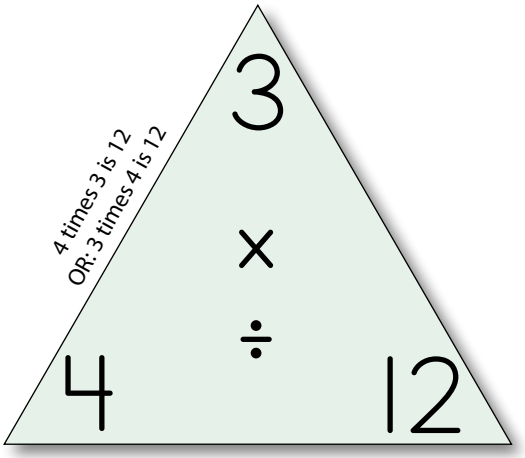


Like This: 5 take away 3 is 2.
OR: 5 take away 2 is 3.

$$3 \times 4 = 12$$

$$\begin{array}{r} 3 \\ \times\ 4 \\ \hline 12 \end{array}$$

Move your finger from one number to the next as you say it.



Like This: 12 divided by 3 is 4
OR: 12 divided by 4 is 3

Creating the Cards

What you will need to create your right-brain flashcards:

- ☐ index cards
- ☐ card stock cut into triangles with 3 or 4-inch sides
- ☐ pen or pencil

Optional:

- ☐ stickers
- ☐ markers
- ☐ any other craft items that can be used to "jazz up" your creations

How to make them:

1. Write the entire fact on the card.
2. Have your child practice often.
3. Optional: decorate the card and make a story to match the fact.

Section #4: Memory Work and Math Facts

The Facts about Math Facts

- **You cannot force someone to memorize something;** you can work with them to find what will help them learn. Please don't turn it into a battle.
- **Memorizing math facts makes life easier.** Sometimes when pokey, unmotivated memorizers hit the place in their math journey where they run out of fingers and toes to count on, they see the value of memorizing and therefore begin to invest in it. Sometimes not. You still can't force someone to memorize, but you can pray for wisdom to understand the underlying issues.
- **Generally speaking, when a child refuses to memorize math facts (or spelling rules, or Scripture verses, etc.), there is an underlying issue.** Always address from the outside in when trying to narrow down what is going on. Are they struggling with a physical issue that is either impeding them from taking in the information or processing for long term storage of memory? If everything is okay on the physical level, go to the character and spiritual level. Is this a pattern of laziness that is evident in other areas of their life? Is this a point of rebellion, disobedience, or stubbornness? Is it just plain childish foolishness with a disconnect between actions and consequences? If your child is dragging their feet in memorizing, please don't panic.

Note: We as parents tend to approach these situations with the mindset that our kids are "broken" or "bad" in some way, and we need to "fix" or "correct" them. We take it personally that we can't control the situation, which in turn feeds our insecurity. This type of thinking puts us in a "fix or punish" mindset, which puts everyone involved in a bad mood. No one likes to be approached in this way, including our children. It is much more beneficial to everyone involved if we approach it from the understanding that we are all developing and growing. Our children are not just learning the discipline to memorize, they are learning to be the boss of their will. We as parents can and should empathize with this, because we too, still battle to be the boss of our own wills. **Be aware, however, empathizing with someone is not the same thing as allowing them to take the easy path.** Memorization strengthens the brain. Not only are the facts beneficial, but the act of memorizing is also extremely brain-strengthening and benefits the child in every area.

Tips for Memory Work:

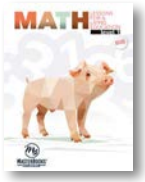
- **Don't overwhelm your student** with the number of facts to memorize.
- **Make flashcards and use them regularly.** I do periodically remind you to instruct your child to use their flashcards, but you decide if you want them to practice more often.
- **Play games.** For younger children, a game of matching works great.
- **Make memory work fun.** Lighten up. Celebrate victories.
- **Set an example.** Show your children that you are working on memory work as well.
- **Don't make math facts the only material you use for memory work.** Choose something from every area of learning to memorize — even if it is one sentence per week. Have recitation bees.*
- **Keep track of the facts** that your student knows by making a list each month or so of the ones they still need to work on memorizing.

Math Lessons for a Living Education is designed to not overwhelm the child or the parent with a ridiculous amount of memorizing. I have provided a chart for each of the levels, showing the important flashcards. Remember, this is not a race. Memorizing is not a one-shot deal; it takes time to become permanent. Allow your child to process at their own speed and facilitate the process.

You will notice that throughout the levels 3 and up, multiplication and division facts are reviewed and practiced in a variety of ways. Your student will work with them in their lessons, using vertical and horizontal problems, multiplication grids, copywork, and flashcards.

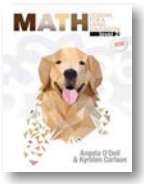
* I explain recitation bees in Part 4, Section 3.

Charts of Facts to Learn by Level



Math
Level 1

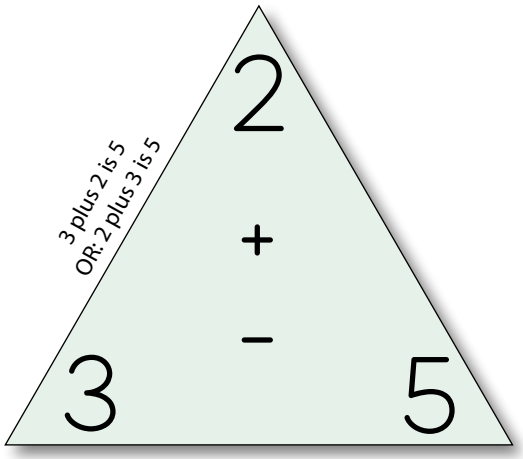
Day 71 (Lesson 15, Exercise 1)	2 + 2 = 4, 3 + 3 = 6, 3 + 1 = 4, 4 + 1 = 5
Day 76 (Lesson 16, Exercise 1)	4 + 4 = 8, 5 + 5 = 10
Day 88 (Lesson 18, Exercise 3)	[10's Family] 1 + 9 = 10, 2 + 8 = 10, 3 + 7 = 10, 4 + 6 = 10, 5 + 5 = 10
Day 116 (Lesson 24, Exercise 1)	3 + 4 = 7, 4 + 5 = 9
Day 123 (Lesson 25, Exercise 3)	2 + 3 = 5, 3 + 5 = 8
Day 126 (Lesson 26, Exercise 1)	Time Concepts Flashcards: refer to course schedule in Student Book for page number of Lesson 26, Exercise 1



Math Level 2

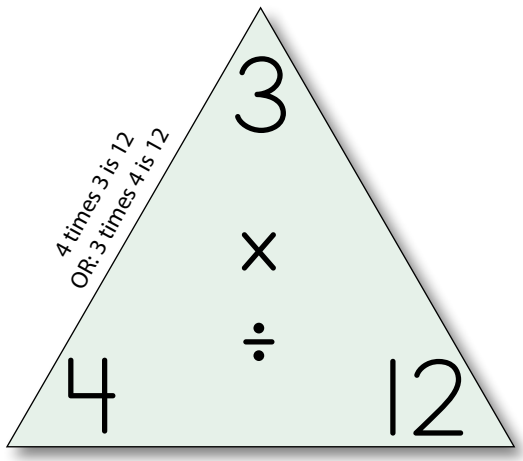
Day 6 (Lesson 2, Exercise 1)	4 + 1 = 5, 1 + 4 = 5, 2 + 3 = 5, 3 + 2 = 5
Day 10 (Lesson 2, Exercise 5)	24 hours = 1 day, 12 months = 1 year, 7 days = 1 week, Optional: 60 seconds = 1 minute 7 days of the week flashcards 12 months of the year flashcards
Day 13-14 (Lesson 3, Exercise 3-4)	Optional flashcard: 12 inches = 1 foot [from Lesson 12, Exercise 1] Subtraction facts of Math Level 2 (Make flashcards; split activity over two days)
Day 75 (Lesson 15, Exercise 5)	Doubles facts: refer to course schedule in Student Book for page number of Lesson 19, Exercise 5 of *Math Level 2*. I highly suggest using triangle flashcards for these.
Day 94 (Lesson 19, Exercise 4)	Money concepts flashcards: refer to course schedule in Student Book for page number of Lesson 19, Exercise 4 of *Math Level 2*.
Day 111 (Lesson 23, Exercise 1)	Measurement/weight concepts flashcards: 16 ounces (oz) = 1 pound (lb), Example of an ounce: a paper clip Example of a pound: a loaf of bread
Day 118 (Lesson 24, Exercise 3)	More measurement/weight concepts flashcards: 2 cups = 1 pint, 4 cups = 1 quart 2 pints = 1 quart, 8 pints = 1 gallon 4 quarts = 1 gallon, 16 cups = 1 gallon
Day 143 (Lesson 29, Exercise 3)	365 days = 1 year 52 weeks = 1 year

Move your finger from one number to the next as you say it.

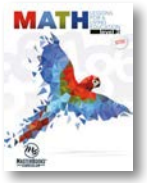


Like This: 5 take away 3 is 2.
OR: 5 take away 2 is 3.

Move your finger from one number to the next as you say it.



Like This: 12 divided by 3 is 4
OR: 12 divided by 4 is 3



Math Level 3

Part 1, Addition/Subtraction Facts

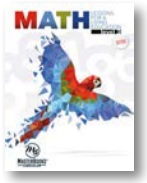
Important note: If you are beginning the series at level 3, please take a few minutes to assess where your student is in the process of memorizing their addition and subtraction facts. There are two pages of addition and subtraction facts in Lesson 2 of *Math Level 3*. You may use these to see what facts your student has memorized. Simply watch them to see if they have to count to find the answer. Have them place a star next to the ones they need to memorize. Please take the time to create flashcards for the facts they need to memorize, and work on them often. Look through the chart showing the flashcards for *Math Level 2*. Notice especially the measurement facts learned in *Math Level 2*. If your child does not know these facts, please have them create flashcards for them, and work on them often until they are memorized.

In *Math Level 3*, the memorization of facts is a little different than in the other levels. Before multiplication and division are introduced in Lesson 12, the focus is to make sure the student has a grasp on the relationship between addition and subtraction. To cement this relationship in their minds, I have them learn the addition/subtraction fact families. Below, I have created a chart for memorization of the main fact families to be completed between Lesson 4 and 10.

Please Note: this is an *optional* assignment. If your student knows these well, please do not have them complete this.

Directions for making right-brain flashcards for addition/subtraction fact families: Study the example of the triangle flashcards on the previous page. Make one card for each family.

During Lesson 4	Family #1: 2 + 3 = 5, 3 + 2 = 5, 5 - 2 = 3, 5 - 3 = 2
During Lesson 5	Family #2: 3 + 4 = 7, 4 + 3 = 7, 7 - 3 = 4, 7 - 4 = 3
During Lesson 6	Family #3: 4 + 5 = 9, 5 + 4 = 9, 9 - 4 = 5, 9 - 5 = 4
During Lesson 7	Family #4: 2 + 8 = 10, 8 + 2 =10, 10 - 2 = 8, 10 - 8 = 2
During Lesson 8	Family #5: 3 + 5 = 8, 5 + 3 = 8, 8 - 3 = 5, 8 - 5 = 3
During Lesson 9	Family #6: 6 + 4 = 10, 4 + 6 = 10, 10 - 4 = 6, 10 - 6 = 4
During Lesson 10	Family #7: 4 + 7 = 11, 7 + 4 = 11, 11 - 4 = 7, 11 - 7 = 4

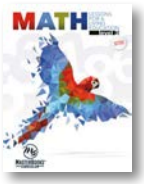


Math Level 3 Continued (Multiplication & Division Facts*)

[Optional schedule: Triangle right-brain flashcards]

Each row of facts on this page and continued on the next page represent one flash card.

During Lesson 13 Create one card per day	2 x 2 = 4, 4 ÷ 2 = 2 2 x 3 = 6, 3 x 2 = 6, 6 ÷ 2 = 3, 6 ÷ 3 = 2 2 x 4 = 8, 4 x 2 = 8, 8 ÷ 2 = 4, 8 ÷ 4 = 2 2 x 5 = 10, 5 x 2 = 10, 10 ÷ 2 = 5, 10 ÷ 5 = 2 2 x 6 = 12, 6 x 2 = 12, 12 ÷ 2 = 6, 12 ÷ 6 = 2
During Lesson 14 Create one card per day	2 x 7 = 14, 7 x 2 = 14, 14 ÷ 2 = 7, 14 ÷ 7 = 2 2 x 8 = 16, 8 x 2 = 16, 16 ÷ 2 = 8, 16 ÷ 8 = 2 2 x 9 = 18, 9 x 2 = 18, 18 ÷ 2 = 9, 18 ÷ 9 = 2 2 x 10 = 20, 10 x 2 = 20, 20 ÷ 2 = 10, 20 ÷ 10 = 2
During Lesson 15 Create one card per day	5 x 3 = 15, 3 x 5 = 15, 15 ÷ 5 = 3, 15 ÷ 3 = 5 5 x 4 = 20, 4 x 5 = 20, 20 ÷ 4 = 5, 20 ÷ 5 = 4 5 x 5 = 25, 25 ÷ 5 = 5 5 x 6 = 30, 6 x 5 = 30, 30 ÷ 5 = 6, 30 ÷ 6 = 5 5 x 7 = 35, 7 x 5 = 35, 35 ÷ 5 = 7, 35 ÷ 7 = 5
During Lesson 16 Create one card per day	5 x 8 = 40, 8 x 5 = 40, 40 ÷ 5 = 8, 40 ÷ 8 = 5 5 x 9 = 45, 9 x 5 = 45, 45 ÷ 5 = 9, 45 ÷ 9 = 5 5 x 10 = 50, 10 x 5 = 50, 50 ÷ 5 = 10, 50 ÷ 10 = 5 3 x 3 = 9, 9 ÷ 3 = 3 3 x 4 = 12, 4 x 3 = 12, 12 ÷ 3 = 4, 12 ÷ 4 = 3
During Lesson 17 Create one card per day	3 x 6 = 18, 6 x 3 = 18, 18 ÷ 3 = 6, 18 ÷ 6 = 3 3 x 7 = 21, 7 x 3 = 21, 21 ÷ 3 = 7, 21 ÷ 7 = 3 3 x 8 = 24, 8 x 3 = 24, 24 ÷ 3 = 8, 24 ÷ 8 = 3 3 x 9 = 27, 9 x 3 = 27, 27 ÷ 3 = 9, 27 ÷ 9 = 3 3 x 10 = 30, 10 x 3 = 30, 30 ÷ 3 = 10, 30 ÷ 10 = 3
During Lesson 18 Create one card per day	4 x 4 = 16, 16 ÷ 4 = 4 4 x 6 = 24, 6 x 4 = 24, 24 ÷ 4 = 6, 24 ÷ 6 = 4 4 x 7 = 28, 7 x 4 = 28, 28 ÷ 4 = 7, 28 ÷ 7 = 4 4 x 8 = 32, 8 x 4 = 32, 32 ÷ 4 = 8, 32 ÷ 8 = 4 4 x 9 = 36, 9 x 4 = 36, 36 ÷ 4 = 9, 36 ÷ 9 = 4



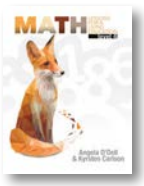
Math Level 3 Continued (Multiplication & Division Facts*)

[Optional schedule: Triangle right-brain flashcards]

Each row of facts on this page and continued on the next page represent one flash card.

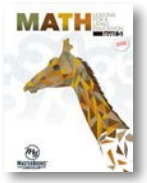
During Lesson 19 Create one card per day	4 x 10 = 40, 10 x 4 = 40, 40 ÷ 4 = 10, 40 ÷ 10 = 4 6 x 6 = 36, 36 ÷ 6 = 6 6 x 7 = 42, 7 x 6 = 42, 42 ÷ 6 = 7, 42 ÷ 7 = 6 6 x 8 = 48, 8 x 6 = 48, 48 ÷ 6 = 8, 48 ÷ 8 = 6 6 x 9 = 54, 9 x 6 = 54, 54 ÷ 6 = 9, 54 ÷ 9 = 6
During Lesson 20 Create one card per day	6 x 10 = 60, 10 x 6 = 60, 60 ÷ 6 = 10, 60 ÷ 10 = 6 7 x 7 = 49, 49 ÷ 7 = 7 7 x 8 = 56, 8 x 7 = 56, 56 ÷ 7 = 8, 56 ÷ 8 = 7 7 x 9 = 63, 9 x 7 = 63, 63 ÷ 7 = 9, 63 ÷ 9 = 7 7 x 10 = 70, 10 x 7 = 70, 70 ÷ 7 = 10, 70 ÷ 10 = 7
During Lesson 21 Create one card per day	8 x 8 = 64, 64 ÷ 8 = 8 8 x 9 = 72, 9 x 8 = 72, 72 ÷ 8 = 9, 72 ÷ 9 = 8 8 x 10 = 80, 10 x 8 = 80, 80 ÷ 8 = 10, 80 ÷ 10 = 8 9 x 9 = 81, 81 ÷ 9 = 9 9 x 10 = 90, 10 x 9 = 90, 90 ÷ 9 = 10, 90 ÷ 10 = 9

* You will notice what seems to be missing facts in each family. This is because your child has already created a card for that fact as part of another fact family. For example: 3 x 5 is missing from the 3's grouping because it was already included in the 5's grouping.



Math Level 4

Day 50 [Lesson 10, Exercise 5]	Measurement facts: 8 quarts = 1 peck, 4 pecks = 1 bushel From least to greatest: pint, quart, gallon, peck, bushel
Day 122 [Lesson 25, Exercise 2]	Shapes flashcards: refer to course schedule in Student Book for page number of Lesson 25, Exercise 2 of *Math Level 4*



Math
Level 5

Day 61 [Lesson 13, Exercise 1]	Thinking Tools card: divisible by 2?
Day 62 [Lesson 13, Exercise 2]	Thinking Tools cards: divisible by 5? divisible by 10?
Day 63 [Lesson 13, Exercise 3]	Thinking Tools cards: divisible by 3? divisible by 9?
Day 65 [Lesson 13, Exercise 5]	Thinking Tools card: divisible by 4?
Days 91-95 [Lesson 19, Exercise 1-5]	Thinking Tools cards: #1-#9: refer to course schedule in Student Book for page number of Lesson 19, Exercise 1-5
Day 100 [Lesson 20, Exercise 5]	New concept card
Day 105 [Lesson 21, Exercise 5]	New concept card
Day 130 [Lesson 26, Exercise 5]	New concept cards #1 and #2
Day 135 [Lesson 27, Exercise 5]	3 Thinking Tools cards

Section #5: Oral Narration in Math?

The Why

One of the most common questions I receive about the *Math Lessons for a Living Education* series is **"Why are there no tests? Don't I need a test to see what my kids know?"** Although I do believe that test-taking is a necessary skill, I have found it to be counterproductive when it comes to young children and math (and every other subject). Most of us, when we know we have a test approaching, subconsciously switch to a different brain mode. Instead of engaging with the concepts in a creative/critical fashion, we begin to worry about what is on the test. Most of us, if we grew up in a traditional classroom setting, have been trained to study for the test, dump our stored-up rote memory information, and move on. Case in point…

Throughout my high school years, I made straight A's on my report cards. I even made excellent grades in Spanish (which I took for four years). I don't speak Spanish. I look at the few papers I have from those years, and the content is a foreign language. Although at the time, I could conjugate verbs in Spanish, write entire conversations in Spanish, and diagram sentences in Spanish, I was never required to actually speak it. I used a textbook that had me fill in the blanks and take tests. How many hours did I waste "doing Spanish" those four years? How many hours did I spend doing something that had absolutely no long-term value to me? And for what? So, I could sport an A+ on my report cards? I use my experience with Spanish as an example, but basically every other subject I took those years in a traditional classroom setting were the same. Read a textbook. Answer the end-of-the-chapter questions. Take a test. Forget it all within three months to a year. I learned to become good at taking tests, not at actually learning.

Homeschooling gives us the opportunity to use better methods of seeing what our children know.

This is where oral (and later, written) narration comes in. I have already written in-depth about the importance of teaching our children to train their brains' hemispheres to work together, and I've explained the importance of them being able to articulate their thoughts. (If you have not read about this, please go back to Part 1, Section 2 now.) This is what oral narration does for them. Oral narration requires many levels of thinking — far more than taking a test does. Remember, communication is a learned skill, and we, the parents, are meant to be gentle guides in the acquisition of it.

To orally narrate what they know about a particular concept, they have to mentally review what they have learned, choose what is important information, and place that information into the proper sequence. Next, they have to create sentences explaining the information in the same order that they have it arranged in their minds. Most of the time, I instruct the student to either use manipulatives or write on a whiteboard to show what they are saying. Oral narration is hard. In fact, on a scale of 1 to 10 — with 10 being extremely difficult — for most kids (and their parents), it's at least a 9. But it is worth doing. It's not just about the math concepts they are learning; it's about growing in mental acuity and agility. The more the student does it, the better they get at it because their brains are being trained and are more under control.

The How

If you are starting with a young child, simply have them tell backstories you have read to them, stories they have read to themselves, math concepts that you have worked through together, and anything else that your day brings along. Did you read the Bible together as a family? Informally have your child tell you about it. Watch a fun movie together on movie night? Ask your child about it a day or so later. Don't be all worried about them getting all of the details and plot twists — just let them retell it the way they remember it. If there is a hugely glaring discrepancy in their understanding, just matter of factly correct them by saying something like, "Actually, honey, this is what happened." Don't make it a big deal. Everyone misunderstands or misinterprets sometimes. If your child tends to be a perfectionist and is overly sensitive to correction or making a mistake, this will help them to realize that it is a normal part of life.

On a side note, I had a child who was extremely sensitive to making mistakes and didn't like to be corrected or criticized for anything. She would cry or sulk whenever she made a mistake, broke something, or even misspelled a word. I decided that I was going to come alongside her to help her with this particular weakness of her character instead of walking on eggshells around her in order not to hurt her feelings. I began by pointing out my own faults and mistakes. If I was writing on the whiteboard and spelled a word wrong, I said something like, "Oh my goodness, I completely misspelled that! Hmmm…I don't know how to spell it. Honey, would you look that word up for me in your dictionary and tell me how to spell it?" Or if I accidentally spilled something, I would apologize out loud to everyone around me and say, "Oh, I'm sorry! Did I get that on you? Please let me wipe it up before you step in it!" The more I took everyday situations and turned them into "failing forward" opportunities, the more all of my kids loosened up, and the perfectionistic one began emulating what I was modeling for her.

If you are starting oral narration with an older student (Jr. high and up), this transition into actually thinking through concepts and articulating them can be a little rough — I'm not going to kid you. My eldest child was a middle-schooler when I began using oral narration with my children. We were coming from a curriculum that tested everything the kids studied. It was a challenging transition for both of my older children. We began very small and built up, like this: if we were reading, I stopped every paragraph and had them take turns orally narrating what I had just read. When we first started with this, I had to reread the same paragraph multiple times before they could orally narrate (I thought I was doing to lose my mind, honestly). But we kept going, **and it paid off.**

After a month or so of stopping after each paragraph, I started reading a few paragraphs at a time before stopping. My children had learned that they had better pay attention because they didn't know who I was going to call upon. I also had them give me oral narrations about the books they were using for readers. We carried this method across our curriculum, with oral narrations for every subject, including math. My two older children were beginning to get into the bigger place value concepts. The use of oral narration exposed some glaring holes in their foundational understanding, so we backed up all the way to the beginning and began with the ones' place. Whenever I taught them a lesson or they read the lesson themselves, they knew that they better listen and read for understanding because, chances were, they were going to have to narrate and show what they had learned. **Oral narration nips lazy reading and listening in the bud and sets the student on the track for advanced critical reading skills needed in higher education.**

Although I have been asked numerous times for narration prompts to use, the value of oral narration comes from the parent's knowledge of what their own unique child has been learning, as well as their strengths, weaknesses, and learning style. Although I love children and want to help parents in their homeschooling journey, there is only so much I can do because I don't know your child. Oral narration requires the parent to plug into their child's learning journey and process. There is really no right or wrong way of asking for an oral narration. Simply ask the child to retell what they read, saw, heard, etc. The good news is, the more plugged in you become, the easier it is to assess where your child is in their journey.