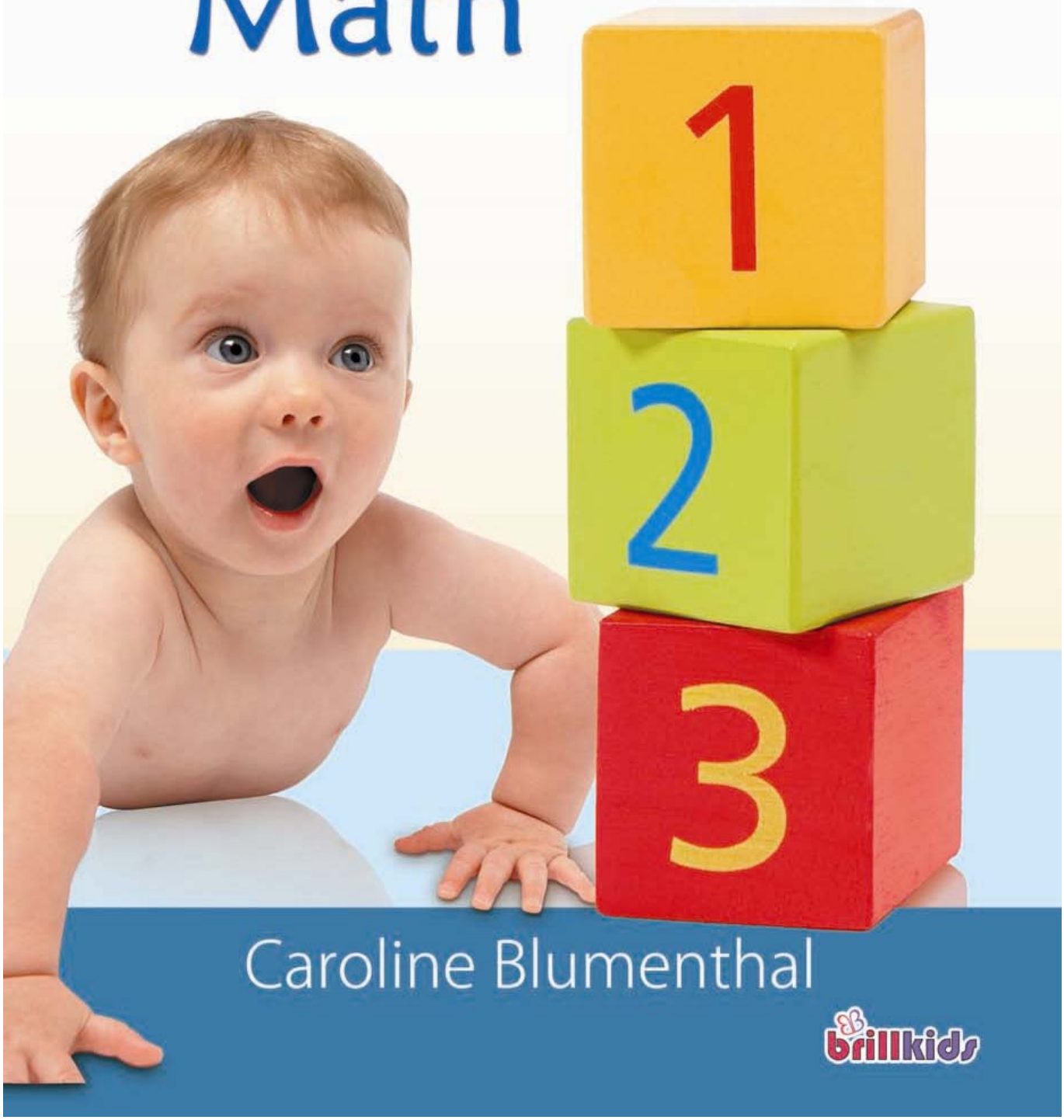
Everything you need to know about

Teaching Your Baby Math



Caroline Blumenthal

brillkids

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TEACHING YOUR BABY MATH

by
Caroline Blumenthal

www.brillkids.com

Visit www.BrillBaby.com to learn more.

FOREWORD

This book is an attempt to address some of the questions new parents may have when thinking about whether – and when – to teach their child math.

The only reason BrillKids exists is because of my daughter Felicity, who learned math as a baby. We personally tried everything out there – flash cards, homemade books, DVDs, PowerPoint slideshows… and a prototype computer program that would become the BrillKids Little Math Learning System.

One of the main reasons I founded BrillKids was to share with other parents the joy in teaching babies. I wanted to let parents know that babies can learn – and that, most importantly, they love learning! I found out after starting the company that the topic of teaching babies is a little more complicated than that. Not every parent – or expert – agrees with giving babies lessons. On the other hand, research studies have come out supporting the benefits of early education.

Meanwhile, we are seeing more and more videos from around the world of very young children coming into contact with the subject of mathematics. Many of these children are less than a year and a half old. The tools used by their parents to teach them are many and varied.

No matter when and how you decide to introduce your child to mathematics, I hope that you find this book an interesting read. I hope that it answers some of the questions you may have. I also hope that if you do decide to become your child's first teacher, you will visit us in the BrillKids Forum – where you can meet thousands of other parents teaching their children.

Finally, I would like to share something about teaching young children that every parent should know. The number one rule is to have fun doing it! Treat lessons primarily as a time for bonding, and enjoy the experience with your child. As long as you do that, you can't go wrong.

Happy learning!

KL Wong,

Founder and CEO, BrillKids Inc.

CHAPTER 1

INTRODUCTION

Can you really teach math to a baby? And why would you want to?

The possibility of introducing babies to mathematical concepts is an intriguing one, if you believe in right-brain learning.

The work of right-brain educators Glenn Doman and Makoto Shichida shows that very young children can perceive quantity in a way not open to most adults. Children below the age of two and half can, for instance, tell that they are looking at 48 triangles – and not 49 or 47. They can do this without counting or guessing. To find out more about this amazing natural ability and what it means for your child's math lessons, go to Chapter 3: Perceiving Quantity (Subitizing).

Ready to get started teaching your baby? Head directly to Chapter 4: Flash Method, which covers the Doman and Shichida methods, or Chapter 5: Computer-Based Learning, which describes how you can teach your child using PowerPoint or BrillKids' own Little Math Learning System.

The school system is not geared to teach mathematics as well as it should be taught. The proof is that far too many people leave school with the conviction that they are "no good" at math. This state of affairs may be the norm, but it is far from acceptable. Indeed, the importance of math as a core subject, and life skill, can hardly be overstated.

At BrillKids, we believe that any child of average IQ can grow up feeling at home with numbers and numerical concepts. Just as the gift of early literacy can give children a lifelong love of reading, so early math literacy can virtually ensure children leave school with a high level of confidence in their own mathematical ability.

Now, let's look more at the importance of starting math lessons from a young age, in Why Teach Math Early?

CHAPTER 2

WHY TEACH MATH EARLY?

> *Doing math is one of the most important functions of life, since daily it is vital to civilized human living. From childhood to old age we are concerned with math. The child in school is faced with mathematical problems every day, as are the housewife, the carpenter, the businessman and the space scientist.*
>
> – Glenn Doman, educator and specialist in child brain development

It has been argued that math is the only truly universal language -and it's easy to see why. Mathematics is the language of logic and reasoning; it is the language of pattern and symmetry. Mathematics brings order out of the apparent randomness of life. Mathematics is beautiful. For those of us who have never studied advanced mathematics, popular science books and TV programs provide windows into a world that keeps mathematicians and physicists enthralled their entire lives.

Even if we may never experience the elegant intricacies of advanced mathematics, it's easy to appreciate how powerful a deeper understanding of mathematics can be. How do people fly to the moon and back? How does a bridge remain stable, even during the fiercest hurricane or typhoon? How does the heating or air conditioning system know when to shut off and start up again in order to keep the room at a constant temperature? All of these things depend on mathematics.

Mathematics is at the heart of everyday life. Whether or not your child becomes comfortable with the subject is not something that should be left to chance. We're not saying your child should grow up to be a mathematician, physicist or engineer – or even that by teaching your baby math, you will increase the chances of that happening. What we are saying is that it is within your power as a parent to endow your child with a positive attitude to mathematics – as well as the capability to use math to her advantage in everyday life. It

may be too late for some of us to ever become truly fluent in the language of math. But for our young children, with their ability to absorb so much, the world of mathematics is their oyster!

BABIES CAN DO MATH (FAR BETTER THAN ADULTS CAN)

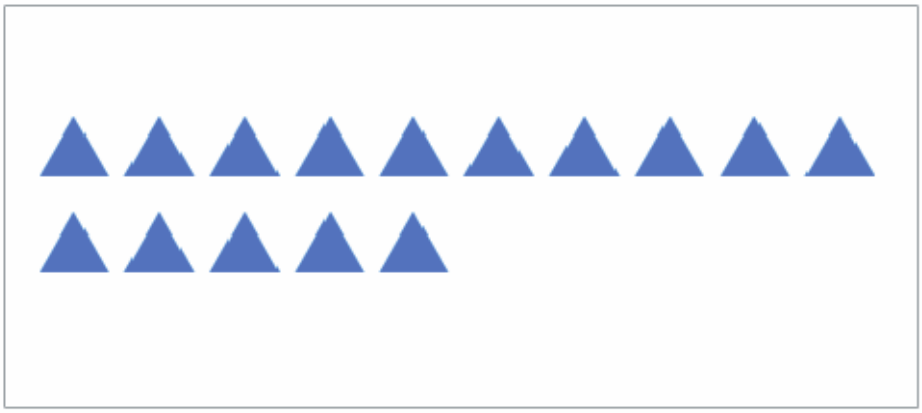
> *If you give [tiny kids] the facts they'll deduce the laws that govern them. That is exactly the same method that scientists use to discover laws.*
>
> – Glenn Doman

While the gift of early literacy is one of the greatest gifts you can ever give a child, it could perhaps be even more important to teach mathematics early. While a child may end up being a good reader even if taught from the age of five or six, there is a certain type of math teaching that – for it to be guaranteed to be successful – must be started before the age of two and a half.

In children under the age of two and a half (and some slightly older children), right-brain dominancy gives the ability to "subitize" large quantities – that is, to instantly perceive how many items are in a relatively large set, without counting or guessing. For more on this, go to Chapter 3: Perceiving Quantity (Subitizing).

As a parent, you can make use of this natural ability in your very young child to teach him about the true nature of quantity. The Doman and Shichida math programs begin by teaching numbers as quantities, rather than the symbols (1, 2, etc) used to represent them. Understanding numbers in this way enables children to instantly "see" the solutions to equations involving addition, subtraction, multiplication and division. And while the ability to subitize large quantities fades as children grow older, the ability to do instant math need not.

Even when children are over the age of two and a half, and can no longer subitize large quantities, there is still a great deal to be said for beginning mathematics at an early age. Quantity recognition can still be taught – but with quantities presented on a grid rather than in a random formation. For example, presenting the number 15 like this…



... makes it easy to tell that there are 15 items, almost as quickly as if there were only 5 items.

The child who understands quantity before she begins learning equations begins her mathematical education on a much more solid footing than the child who does so being familiar only with the symbols used to represent numbers.

IT'S EASY TO TEACH MATH (MUCH EASIER THAN IT USED TO BE)

Traditionally, teaching babies math by the flash method required a big commitment on the part of parents. Some programs involved teaching six or nine times a day – something that is impossible for parents who work full-time. A fair amount of preparation was also involved. Luckily there are now mathematics programs for babies that are designed to be used just once or twice a day – a frequency most parents can maintain. Some, like BrillKids' Little Math Learning System, even provide the lesson materials for you. All you need to do as the teacher is sit down at the computer with your student, and press play!

Another factor that has sometimes made it difficult for parents to teach has been the need to sustain a child's interest in his lessons. While most young babies love seeing dot cards, problems can arise when parents first introduce the cards to an active toddler.

Little Math is designed to enable you to import or create icons – such as animals, insects and cartoon characters – that will appeal to your child's particular interests. For many parents, customizable, varying icons have made all the difference in keeping lessons fun and fresh for their child.

BABIES LOVE LEARNING MATH!

Although we left it till the end, this is actually the most important reason of all for teaching your baby math. Babies love learning about quantity, and they love seeing equations – as long as both of these things are presented in a fun, happy way. If you use your toddler's favorite animal or cartoon character for your Little Math lessons, it won't take long for your child to start asking to see them on a regular basis – probably more often than you had planned to show them!

What's more, children who begin understanding mathematics at an early age are immensely proud of their achievements. All of us feel great when we know the right answer to something. Perhaps no other subject makes such clear distinctions between right and wrong as mathematics.

Mathematics lessons have always been good for babies. The difference now is that these lessons look as fun as they possibly can, and require as little preparation as possible, too. For parents at least, there has surely never been a better time than right now to teach babies math.

CHAPTER 3:

PERCEIVING QUANTITY (SUBITIZING)

To understand why we recommend beginning your child's math lessons before the age of two and a half, it is important to understand the concept of perceiving quantity – also known as "subitizing."

At birth, the right hemisphere of the brain is dominant over the left. This makes sense, as many autonomic functions – critical for the baby's survival – are governed by the right side of the brain. The left side of the brain, which governs rational thought, comes online later – which would explain why it is next to impossible to reason with a very young child!

In most people, the brain shifts dominancy from right to left by around three and a half years of age. The process is a gradual one. It should be stressed that almost everything we do involves both hemispheres of the brain working together. However, the degree to which one hemisphere dominates over the other does affect how we perceive the world – and as a result, our ability to learn.

The right hemisphere is markedly better at absorbing pictures than the left. If you are extremely right-brained, as certain savants are, you might be able to perform the seemingly impossible by, say, producing an entirely accurate aerial map of a landscape you have flown over just once – right down to the exact number of windows on the farthest visible building. SUBITIZE THIS!

In very young children, right-brain dominancy gives the ability to "subitize" large quantities. Wikipedia defines subitizing as a "rapid, accurate and confident judgment of number." This is something we can all do up to a small number of items – usually around 4 or 5. The maximum number of items most adults can subitize is around 10 to 12 (although it will

typically take longer to do so, and the person will feel less confident doing it). After that, you're either guessing or counting.

When a very young child looks at a large number of items, she doesn't need to guess or count to see how many are there. The child can instantly see 48 marbles, in just the same way that the rest of us can instantly see 4 – by subitizing. The only thing the child doesn't know, however, is how to tell us what she sees. She doesn't know that this number is called "forty-eight." In other words, the labels for quantities are what we need to teach the child. Once the child has a foundation in quantity (having learned up to at least the number 20), you can begin equations using those quantities (while continuing to teach up to 100).

Children taught in this way should soon be able to do instant math. Parents will typically present an addition, subtraction, multiplication or division problem, and then provide two or three dot cards from which the child can choose the solution.

The ability to subitize large quantities will typically fade away as a child grows older. The exact age at which children lose this ability varies from person to person. However, it is safe to say that children retain the ability to perceive large quantities at least up to the age of two and a half.

THE REALITY OF NUMBERS

The ability to subitize large numbers of items isn't just amazing to us adults; it's also extremely useful when it comes to teaching mathematics. That's because we can use this ability to help very young children grasp the reality of numbers.

The normal way to teach numbers is to teach the symbols that represent them – 1, 2, 3, etc. However, it is much better to teach children what these symbols really represent – that is, how many items actually make up 1, 2, etc. Renowned educator Maria Montessori knew this

when she recommended that children first experience numbers in the physical sense – as 1 or 2 beads in a bowl, right up to lattices of 100, 200 or 1,000 beads.

The same idea applies when teaching math to your baby or very young child by the flash method, which starts with quantity recognition, and progresses to two-, three- and four-step equations – all of which can be performed by young children without a calculator! The ability to perceive quantity – or to name a perceived quantity – does not of course automatically give your child the ability to do math. But if you can get your child doing equations before he loses the ability to subitize large quantities, then your child should always understand the reality of such equations – even after he has lost the ability to subitize their components. His brain will have been trained to manipulate dozens, even hundreds of items, just as effortlessly as the rest of us can visually subtract 5 items from 7 to make 2.

What will this mean in the long run? It may not be possible to train your child to become one of the world's greatest mathematicians. What you can do, however, is give your child the gift of feeling comfortable with numbers and numerical concepts starting from before school – and for the rest of her life.

WHEN DO I START?

In his book, How To Teach Your Baby Math, Glenn Doman explains how you can give your child quantity lessons starting from birth. If you are using the Little Math Learning System, we recommend beginning any time from 4 months.

For lessons in quantity to be truly successful, it is advisable to begin before the age of two and half. Of course, how you approach your lessons will depend in part on the age of your child. For tips, head to the BrillKids Forum.

> To link to a forum thread with age-appropriate techniques for teaching math by the flash method, go to the Perceiving Quantity article at www.BrillBaby.com

Help! My child is older

If your child is over the age of two and half, there is still plenty you can do to give him a head start in mathematics. Your child may not be able to instantly see large quantities, but you can still give him an idea of what real quantities are by showing him objects in a grid pattern. (For more on this, go to Chapter 5: Computer-Based Learning.) Of course, you don't need a computer to produce quantities on a grid – it does make the job a whole lot easier though!

Now, it's time to find out what the Doman and Shichida math programs involve, in Flash Method.

CHAPTER 4:

FLASH METHOD

Traditionally, the flash method involves physical flash cards, which you either make yourself or buy, and which you show rapidly to your child.

Flashing cards (at a speed of less than one second per card) is an effective method of teaching babies, for two reasons:

- Information presented at speed is more easily apprehended by the right hemisphere of the brain. Unlike left-brain memorization, which requires conscious, directed effort, right-brain learning is unconscious and effortless.

- Children, and especially babies, learn at an extremely rapid pace – much faster than adults; much faster even than adults can imagine. The way to keep a child's attention is to move quickly.

If you want to use physical flash cards, purchasing a set of premade flash cards – with the dots used to represent quantities – will save you considerable time and hassle. You can choose to follow either the Doman method, or the Shichida method, as outlined in the pages that follow.

Alternatively, you can use PowerPoint slideshows, or a specially designed computer-based program such as the Little Math Learning System. By going the virtual route, you won't need to make, buy or store any cards. You'll be able to put together equations instantaneously, and will probably find it easier to give lessons (no more fumbling!). Best of all, systems such as BrillKids' Little Math come with a preinstalled curriculum – all you need to do is sit down with your child, and press play. For more on using the computer to teach math, go to Chapter 5: Computer-Based Learning.

PHILOSOPHY (DOMAN)

The method of teaching babies with flash cards was pioneered by Glenn Doman, founder of the Institutes for the Achievement of Human Potential (IAHP), a nonprofit organization that teaches parents how to maximize the potential of their brain-injured or normal child. Doman published his seminal book How To Teach Your Baby Math in 1979.

Doman stresses that the younger a child is, the easier she is to teach. In his book he states that children under the age of two and a half (and some slightly older children) have the ability to perceive quantity. Another way to explain this is to say that very young children can "subitize" large quantities – that is, they can instantly perceive how many items are in a relatively large set, without counting or guessing. (See Chapter 3 for more.)

As a parent, you can make use of this natural ability to teach your child about the true nature of quantity. The first step of the math program, therefore, consists of teaching numbers as quantities, rather than the symbols (numerals) used to represent them. Understanding numbers in this way enables children to instantly "see" the solutions to equations involving addition, subtraction, multiplication and division. And while the ability to subitize large quantities fades as children grow older, the ability to do instant math need not – so long as lessons with quantity were started at a young enough age.

The Doman method is relatively flexible – parents can, and should, put their own stamp on their child's program of learning. Doman often writes "after a few weeks" when describing when to move on to a subsequent stage of teaching. Some parents would prefer to be told exactly what to do when, but this approach reflects the importance Doman places in moving at a pace that suits the individual child. In any case, his instructions are for the most part clear and detailed.

There is no definite end to the program – rather, teaching and learning are seen as ongoing, lifelong processes. The ultimate aim of the Doman program is to make the child fluent in the

"language" of math. As Doman points out, math "literacy" and a love for math are qualities unfortunately lacking in many of us.

PHILOSOPHY (SHICHIDA)

Makoto Shichida began designing his program of accelerated learning for very young children in the 1980s. The Shichida math program is based on the Doman program. However, the Shichida program progresses much more rapidly than the Doman program. If more than a couple of days of a teaching cycle are missed, it will need to be restarted from the beginning.

For Shichida, the important thing is to develop and retain the abilities of the right hemisphere of the brain, or "genius brain," which Shichida says most of us lose the habit of using around the time we start school.

Like the Doman program, the Shichida program begins by teaching numbers as quantities, before moving on to equations using quantities. Unlike Doman, Shichida provides a specific set of equations for parents to teach. Some might find this a bit rigid, while others will appreciate the certainty of knowing exactly what they are going to teach on a particular day. For Shichida, the main aim of the math program is clear in its title: "Lightning Rapid Calculation." Having completed both 65-day cycles twice, the child should be able to demonstrated "human calculator" type skills. The time it takes to achieve this adds up to 65 (days) x 2 (cycles) x 2 (repetitions) = 260 days, or 8.5 months.

Problems could arise when it is not possible to keep up the course on a daily basis. The need to restart a cycle could lead to frustration on the part of parents. More importantly, there is not much room for the child to have off days, when he simply doesn't feel like his lessons. As Janet Doman (director of the IAHP and Glenn Doman's daughter) reminds us, "On a bad day you don't touch [your teaching program] with a 50ft pole…"

METHOD (DOMAN)

The Doman math program is divided into five main subject areas:

1. Quantity recognition
2. Equations using quantity
3. Problem solving
4. Numeral recognition
5. Equations using numerals

This is the order in which the subjects are taught. However, it is not necessary to finish one subject before moving on to the next. Rather, they overlap.

Quantity recognition

Doman points out that quantities are the reality of numbers, while the numerals we use to represent them are arbitrary symbols. The program begins by teaching the numbers 0 to 100 as quantities. The IAHP sells flash cards for this purpose, with the quantities represented by red dots arranged in random formation.

On the first day, you show one set of five cards (numbers 1-5), three times a day. On the second day, you add a second set (numbers 6-10), which you also show three times a day. This means that you will be doing six math sessions a day. Starting from the third day, shuffle cards between the two sets (but keep five to a set). Except for the first time you show the numbers 1-5 and 6-10, remember to shuffle the cards before every lesson.

Starting from the sixth day, retire and add two (or more) cards per day. Begin by retiring and adding two, but be prepared to retire and add more, if you sense that your child would like to move faster.

Teach 1 to 100, and finish with 0.

Equations using quantity

Once you have taught the quantities 1 to 20, it is time to start teaching equations using quantity. You can use any of the quantities your child has so far learned. Do three equations per session, and three sessions per day. Since you are already doing six quantity sessions a day, this means that you will now be doing nine math sessions a day.

In the beginning, keep to two steps (e.g. 1 + 2 = 3). Spend two weeks on each operation, covering addition, subtraction, multiplication, and finally division. Now, it is time to move on to the next stage.

Problem solving

Your child has come far enough for you to be able to present her with two or three possible solutions to an equation from which she can choose the answer. (You should not ask the child for the solution outright, since that would be "testing" – which is frowned on by Doman).

Give your child one problem-solving opportunity per session, tagged on to the end of his equations. So in each session, you will be giving him the answer to three equations, and asking him to choose the answer to a fourth.

You can now move on to three-step equations (e.g. 2 x 2 x 3 = 12) – for both the regular equations and problem-solving one. Do this for a few weeks.

Now, it is time to start making mixed equations. You can mix addition with subtraction, and multiplication with division. However, no mixing of addition/subtraction with multiplication/division is allowed. This is because, writes Doman, "Serious errors can result, errors which can be avoided only after learning both the rule about the Order of Operations AND the reasons behind it."

After a few weeks of mixed equations, add another term to your equations. This means that you will now be doing four-step mixed equations.

Problem solving does not just have to be about equations however. Doman mentions the following additional subject areas for consideration:

- Sequences
- Greater than and less than
- Equalities and inequalities
- Number personality
- Fractions
- Simple algebra

More on what these areas of study would entail can be found in How To Teach Your Baby Math.

Numeral recognition

This extremely easy stage involves presenting the numerals from 1 to 100 and 0 in much the same way as you presented their quantities. In order to maintain your child's interest, you should move much faster than you did when teaching quantity. This means retiring three or four cards a day.

Once you have taught the numerals up to 100, show a variety of higher numerals – up to 1,000 and beyond. Choose any and show at random; there is no need to teach every numeral.

Equations using numerals

Now, just as you taught progressively longer equations involving quantity, do the same with equations involving numerals. Remember not to mix addition/subtraction with multiplication/division.

METHOD (SHICHIDA)

Makoto Shichida based his math program on Glenn Doman's. However, Shichida does not bother to teach numerals or equations using numerals. The subjects involved in the Shichida program are:

1. Quantity recognition
2. Equations using quantity
3. Imaging and problem solving

Unlike with Doman, you will finish teaching quantity before starting on equations. Shichida also mixes all the operations (addition, subtraction, multiplication and division). Since specific equations are set out, the brackets necessary for enforcing the Order of Operations are also provided, so there is no danger of the kind of "serious errors" cited by Doman.

To link to a BrillKids Forum thread with details of the Shichida math program, go to the Flash Method article at www.BrillBaby.com

Quantity recognition

You will teach your child quantity for the first nine days. In the first cycle, you will teach 1-50, and in the second cycle, 51-100. Teach 10 numbers per session. Retire and add 5 numbers per day.

Equations using quantity

Quantity lessons are finished before equation lessons are started. You will spend 10 days on two-step addition, and 5 days on two-step subtraction (since the child will grasp it faster, having already seen addition). Likewise, you will spend 10 days on two-step multiplication, and 5 days on two-step division.

Next, you will spend two weeks on mixed three-step equations. You will then spend a day on mixed four-step equations. Finally, you will revise the quantities learned at the beginning of the cycle.

Imaging and problem solving

The last week of the cycle is spent on imaging – for example, having the child picture numerals turning into dots, and vice versa – and problem solving. Most of the problem solving is similar to Doman problem solving – that is, it is multiple choice. On the last day however, the child will write down the answers to equations without any choices being provided.

If you are teaching math by either the Doman or Shichida method, be sure to visit the BrillKids Forum, where you can compare experiences and get advice from other parents teaching their children math.

You might also consider the Little Math curriculum, which would involve no lesson preparation on your part. Let's delve into this in more detail in our next chapter: Computer-Based Learning.

CHAPTER 5:

COMPUTER-BASED LEARNING

The computer is our best friend – and nowhere is this more true than in the field of mathematics. Cheap computing technology has made it possible for anyone to do mathematical calculations easily, and instantly. This ability to pick up a calculator and tap into it is something nearly all of us take for granted.

But computers don't just make it easy for us to do math; they can make it simple – and fun – for us to teach mathematics, too.

Some parents who use the computer to teach math use PowerPoint. Others use a specially designed program such as BrillKids' Little Math Learning System.

In Chapter 2, we looked at some of the reasons parents may feel intimidated at the prospect of teaching math. The inconvenience of presenting lessons in the traditional format, and difficulty in maintaining children's – particularly toddlers' – interest were among the more valid reasons for discontinuing a child's math lessons.

Our best friend, the computer, has a lot to offer in this regard...

COMPUTER-BASED MATH IS EASIER (FOR PARENTS)

In the old days, if you wanted to teach quantity, you had to use flash cards. If you were following the Doman method, then you would show those cards three to nine times per day. Whether you were following the Doman or the Shichida method, you were expected to give lessons seven days a week.

Some parents follow the Doman or Shichida method, but prefer to use PowerPoint or a computer-based learning system simply because it means no more fumbling with cards (especially while trying to flash them fast enough to encourage right-brain learning). Using the computer also means you don't have to worry about keeping your cards organized, or finding a place to store them.

The advantages and disadvantages of the Doman and Shichida methods were discussed in detail in our last chap-ter. In general, one of the trickier aspects for Doman parents has been deciding which equations to show on which days (and preparing lessons accordingly, and on time). For Shichida parents, a potential source of stress comes from the fact that if more than a couple of days of lessons are missed, the teaching cycle needs to be restarted from the beginning.

The Little Math Learning System is designed to come with a year's worth of lessons preinstalled. All you have to do is sit down with your child and press play. The Little Math curriculum, meanwhile, is designed to be used on weekdays only. This means parents can take the weekends off – or use them to catch up on any lessons missed during the week. Should you decide that the Doman or Shichida program is more to your liking than the Little Math curriculum, then you can download the lesson files you need directly from the BrillKids Forum… and then proceed to simply sitting down with your child and pressing play!

COMPUTER-BASED MATH IS MORE FUN (FOR TODDLERS)

Classically, the flash cards used to teach babies math will have red dots printed on them. While infants tend to enjoy these cards, parents who begin teaching math to a child who is an active toddler sometimes have difficulty retaining their child's interest. Children at this age have very strong likes and dislikes, with dots on cards not tending to score highly!

The best way to get your toddler interested in mathematics (or anything else, for that matter) is to incorporate her interests into lesson time. Little Math and the BrillKids Forum

provide a potentially limitless supply of fun shapes and icons – everything from babies' faces, to animals, to butterflies, to cartoon characters. If your child's favorite character is not in the forum, you can easily crop the image you need and upload it to Little Math. (Remember to upload any icons you create to the forum, to earn valuable loyalty points!) Besides this, Little Math gives you the ability to mix icons and icon sizes – ensuring that no two lessons are ever alike!

MAKING NUMBERS REAL FOR CHILDREN WHO CAN'T PERCEIVE QUANTITY

The way that you teach math will depend at least in part on the age of your child. If your child is under the age of two and a half, you can make the most of her ability to subitize large quantities to teach her quantity recognition from 1 up to 100.

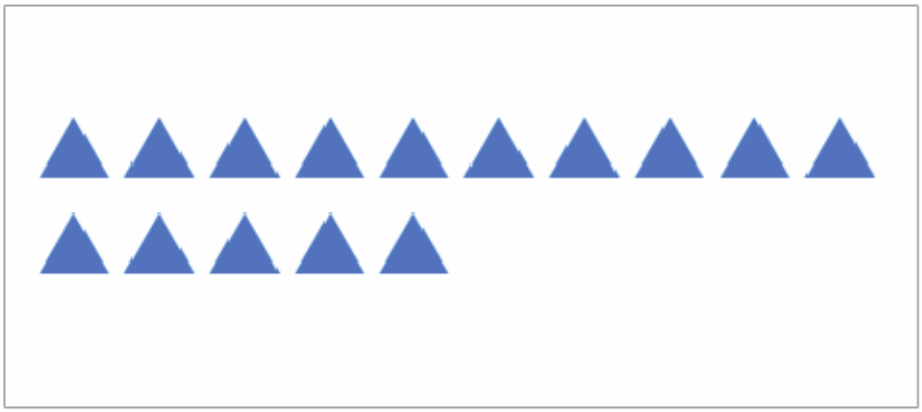
If your child is over two and a half – and especially if he is three or over, his ability to perceive quantity may be diminished. (However, it should be noted that Doman still recommends teaching the quantities from 0 to 20, even if your child is older.)

Some parents of older children feel sad when they realize it is too late for their child to benefit from traditional lessons in quantity. However, while it is wonderful for a child to have real quantities as a frame of reference, it is not the be-all and end-all when it comes to understanding math.

Little Math makes it easy to present quantities in grid formation instead of random formation. In this way, your child can begin to understand the reality of numbers even without being able to subitize larger quantities.

Seeing quantities in grid formation helps children (and adults!) to perform skip counting. For example, you may not be able to subitize 15 items. But look at 15 items arranged on a grid

with 10 on the top row and 5 on the bottom, and you will quickly be able to tell that there are 15 of them – without counting or guessing.



This, in turn, can make the process of solving equations far more intuitive. For example…

Here, the child (or adult!) can literally see 2 lots of 12 making 24, instead of simply trying to memorize a times table.

This is important, since the best way for the child to appreciate any type of mathematics is through logical thinking rather than rote learning.

CHAPTER 6:

CONCLUSION

The importance of mathematics in our lives can hardly be overstated. Math is all around us, and is the only truly universal language there is. At BrillBaby, we believe that the gift of math literacy is one of the greatest gifts a person can ever receive.

You have discovered the advantage very young children have when it comes to understanding quantity. More importantly, you have learned just how fun and easy math lessons for babies and toddlers can be. If you do decide to begin your child's mathematical education during the preschool years, we believe it's a decision you won't regret.

If you have a question about teaching your baby math, or would like to compare your experiences with those of other parents teaching their children, be sure to visit us in the forum at www.BrillKids.com.

Enjoy your learning adventure… and this exciting time in your child's life!

Every child deserves the gift of math literacy.

Can babies really be taught mathematics? And if they can, should they? How is it that some young children can learn to do equations involving three-figure sums without a calculator? And how does a mathematically challenged parent go about teaching math?

Teaching Your Baby Math provides the answers to all these questions and more – including an explanation of how very young children perceive quantity, and a comparison of the methods and tools available for teaching math today.

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www.brillkids.com