Right-Brained Multiplication & Division

a Forget Memorization book

Effortless learning through images, stories, hands-on activities, and patterns

by Sarah Major

www.child-1st.com

Right-Brained Multiplication & Division

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For other teaching and learning resources designed for visual, tactile, kinesthetic and other right-brained learners, visit www.child-1st.com.

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The Easy-for-Me™ Books, sets A and B
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Writing the Visual, Kinesthetic and Auditory Alphabet
SnapWords™ sight word cards and SnapLetters™ stylized alphabet
I Can Sing from 1 to 10
SnapWords™ Spelling Dictionary

ABOUT THIS BOOK

This book is for children who are strongly visual, who learn all at once through pictures, are drawn to patterns, rely on body motions, and who need to understand the process behind each math problem they solve. Child1st teaching and learning resources all follow the principle of conveying learning pieces using a variety of right-brain-friendly elements. We take learning tidbits that utilize symbols (numbers and letters) and abstractions, which are left-brained, and embed them in right-brained elements to beautifully integrate the left and right hemispheres in the brain.

RIGHT-BRAINED ELEMENTS:

1- We embed symbols in ***VISUALS*** so that the child can take a quick look, absorb the learning piece, and store it as an image to be retrieved intact later.

2- We use ***PERSONIFICATION*** which is a powerful element in teaching and learning. The use of personification makes for rapid learning because the very look and personality of the character conveys the substance of the learning. For example, Zeroman with his circular body, bouffant hair style, leer, and magic wand will be an unforgettable visual reminder that when a child multiplies or divides by zero, the magic wand will slash the air and the number will be transformed into a zero. POOSH! Instant learning!

3- We rely on ***PATTERN DISCOVERY*** as a way of making numbers come alive and as a means of conveying the amazing relationships between numbers. What results is number sense. Because the brain is a pattern seeking organ, it is drawn to material that follows patterns. It is my desire that through this teaching resource, many children who are overwhelmed or daunted by math might come to truly be fascinated by it instead.

4- We use ***STORY*** to contain the meaning of what we are teaching in math. Stories, like visuals, make learning unforgettable. They explain the “why” behind math concepts and tie everything together, creating a vehicle for meaning and for recall.

5- We use ***BODY MOTION—***both gesture and whole body movement. Some of the movement includes clapping and chanting, while some is acting out the story of the individual table. Again, body movement is a powerful agent for learning and remembering. For many people, body motion makes recall effortless if the learning piece is directly tied to a unique motion.

6- We employ ***VISUALIZATION—***a powerful tool for right-brain-dominant learners. If they are given time to transfer the image on the paper in front of them to their brains (prompt them to close their eyes and SEE it in their mind’s eye), they will be able to retrieve that image later. If the image contains learning concepts, this is how they will remember what you want them to learn. So in this book, each time a visual is introduced, prompt the student(s) to “see” the image in their mind, eyes closed.

Multiplication and Division TEACHING CARDS

We’ve created full color teaching cards for classroom display to accompany this book. The cards each have a character such as Zeroman or a visual of a problem such as 5 x 9 = 45. While all the visuals are included in this book, if you desire to display the stylized facts on a wall, bulletin board or in a pocket chart, visit www.child-1st.com and search for Multiplication and Division Teaching Cards. Use code MDCARDS for 10% off your order. Color, 8.5” x 5.5”.

HOW TOs

1- Scan the chart on page 5, which shows the total number of facts to be learned. This chart is an important piece that will allow your student(s) to track their own progress. Supply each child with a chart of their own so they can color each square as they master facts. It is important for the child(ren) to both see how many concepts they need to learn and to monitor their own progress.

2- Familiarize yourself with the various characters and stories in the book before beginning to teach any of it. The text in the book is directed to the student(s) rather than the teacher. This will make it simple for the teacher or parent to teach the content, but do be sure that you prepare ahead of time so you're not just reading the content to the child(ren).

3- If you are teaching one child or a small group, share the illustrations in the book as you go through the lesson. Each chapter includes full-sized illustrations that will enhance your child(ren)'s visual memory of the tables. Allow them time to really study the image and to visually imprint it on their minds.

4- Let the child(ren) absorb at their own pace rather than rushing them into drill and memorization. Memorization of facts might seem to be the most direct route to learning multiplication and division, but it is least effective in the long run.

5- Photocopy the practice problems from Appendix A before starting each chapter. The problem section numbers are included in each chapter for reference. It is important to stop and practice often as you progress through the chapter. The hands-on time will make learning stick.

6- Teach the tables in the order presented in this book, rather than going in numerical order. The sequence of lessons was designed to be as kid-friendly as possible. We have grouped tables together that are closely related such as zero and 10s, and 1s and 11s, and we have the 12s following closely behind 2s as their answers are very similar.

7- Allow plenty of time to practice; encourage the child(ren) to monitor their own fluency with the facts and teach them to ask for more practice problems if they are not completely sure they know their facts. Allow time for the child(ren) to retell stories, to draw their own pictures for the problems, and to share what they are learning with another child or adult. All this will deepen their learning and enhance recall.

8- More than one way to learn the facts is presented in each chapter. Follow each child's lead in finding the method that works the best for him/her. A valuable practice while going through this book is to lead your child(ren) into a better understanding of how they most efficiently learn and remember. I always ask children "How did you remember that?" or "How can you remember that?" Once children understand that they have more than one good way to learn something, they will pay attention to what works for them.

9- Appendix B contains an answer key to save you time as you check your child(ren)'s work.

SYMBOLS USED IN THIS BOOK

The book symbol identifies stories about times tables and also identifies story problems.

The hand symbol identifies hands-on activities throughout the chapters.

The pencil cup draws attention to practice problems and where they are found in Appendix A.

The division symbol accompanies explanation of division procedures in each chapter.

The multiplication symbol accompanies explanation of multiplication procedures.

This chart shows the multiplication and division facts your child(ren) need to learn. The brown bar at the top shows the order in which we will learn the tables. As the child learns one set of facts, she should color in those boxes so she can chart her progress. 10s are done for you.

Because many facts overlap (such as 2 x 5 and 5 x 2) we have not included the bottom half of the chart. Your child will be excited to see his progress!

Multiplication & Division Facts Name_____

Start date:		#3	#7	#8	#5	#9	#10	#11	#6	#1	#2	#4
	1x	2x	3x	4x	5x	6x	7x	8x	9x	10x	11x	12x
1=	1	2	3	4	5	6	7	8	9	10	11	12
2=		4	6	8	10	12	14	16	18	20	22	24
3=			9	12	15	18	21	24	27	30	33	36
4=				16	20	24	28	32	36	40	44	48
5=					25	30	35	40	45	50	55	60
6=						36	42	48	54	60	66	72
7=							49	56	63	70	77	84
8=								64	72	80	88	96
9=									81	90	99	108
10=										100	110	120
11=											121	132
12=												144

DAILY PROCEDURE:

- Copy necessary practice sheets.
- Display appropriate teaching card if you are teaching more than one child (see info on the bottom of page 3).
- Share with the child(ren) the story that explains the chapter's character. ***Stories are in italics.*** *Story problems are blue.*
- Emphasize the visuals as a means of remembering how to solve each times table.
- Allow for plenty of practice. If you need more problem sheets than what is provided in Appendix A, any multiplication and division practice sheets will work to supply ample practice. Be sure to do the hands-on activities.
- Teach multiplication and division together as mirror processes—trios of numbers allow for both functions. For example, 3 x 5 = 15, 5 x 3 = 15, 15 ÷ 3 = 5, and 15 ÷ 5 = 3. Make sure the child(ren) understand that the two small numbers in each trio can switch places with each other, but the large number in each trio stays put. You could not, for example, say 15 ÷ 3 = 5 and 3 ÷ 15 = 5. The 15 stays put and the small numbers, 3 and 5, can switch places.

TABLE Of CONTENTS & LEARNING FOCUS FOR EACH CHAPTER

Each chapter is different from the others. Below each chapter title, the focus provided will be the pathway to the brain or the primary elements that will help the student(s) learn and recall the multiplication and division facts. Emphasize these as you go through the lesson. After each lesson, take time to ask the student(s) which element was most effective in helping them learn and remember their facts.

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Focus: personification and what the characters do.

Chapter 2 - Meet Agent 1 & Double Agent 11 16
Focus: personification, images, patterns, and story.

Chapter 3 - Miss 2 Sees Double 23
Focus: story and accompanying visuals. Rely heavily on visualization.

Chapter 4 - Giant Twelves 34
Focus: pattern discovery in the answers chart, relationship to 2x table, story.

Chapter 5 - High Fives 49
Focus: patterns in the answers chart, patterns in the odd and even answers, relationship to 10x, images.

Chapter 6 - Nifty Nine 60
Focus: patterns in the answers chart, images, jingles on visuals, solving on hands.

Chapter 7 - Three Big Mice, See How They Run 72
Focus: story and accompanying images. Rely heavily on visualization.

Chapter 8 - Four, Four, Shut the Doors 79
Focus: story which explains visuals. Rely on visualization and retelling of the stories.

Chapter 9 - Six, Six, Pick Up Sticks 84
Focus: story which explains visuals. Encourage retelling of the story and redrawing visuals.

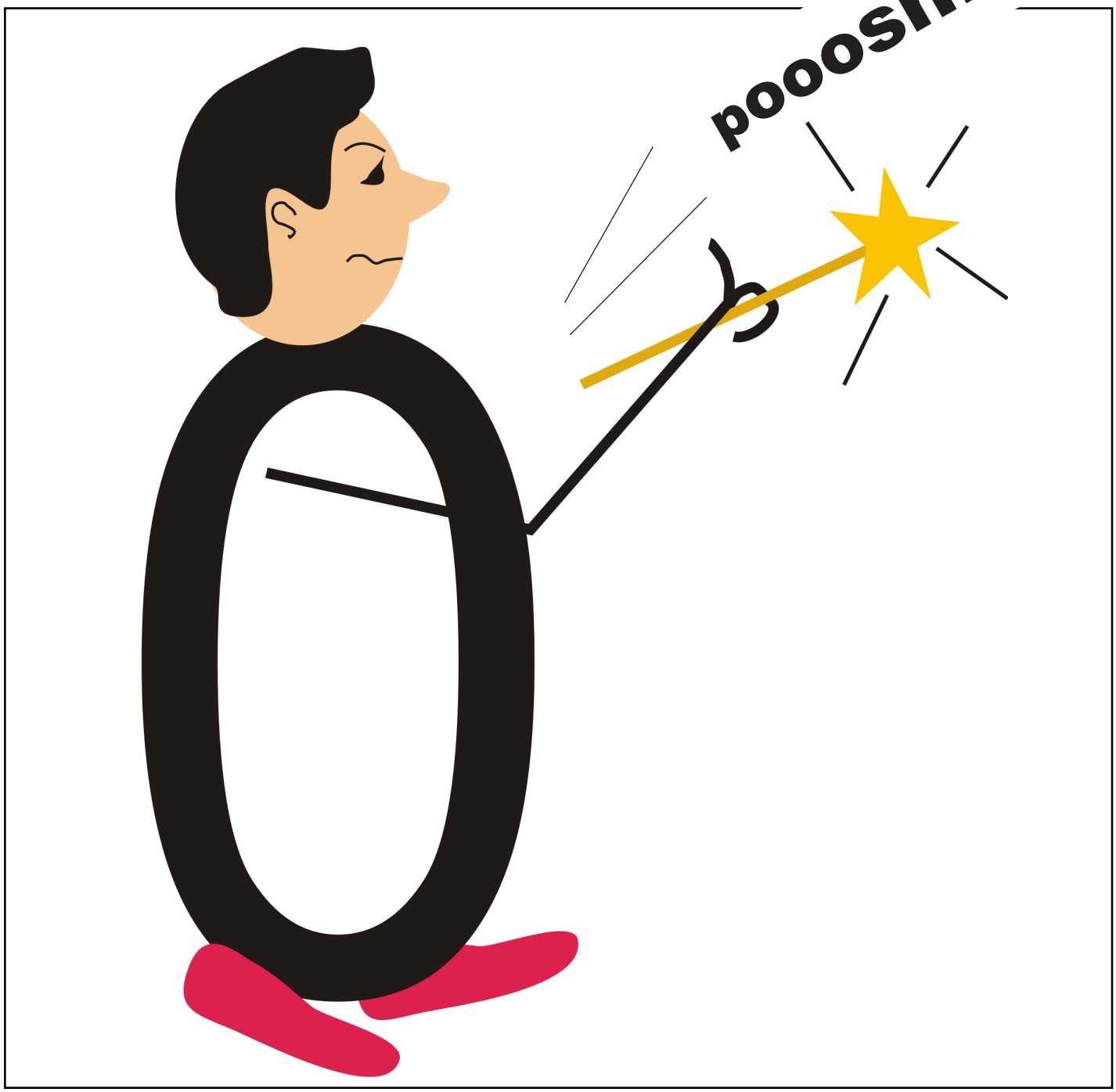
Chapter 10 - Sevens and the Helium Balloon Fair 88
Focus: images with problems embedded. Rely heavily on visualization and retelling.

Chapter 11 - Eight Makes Her Escape 90
Focus: image with problem embedded. Visualization and story retelling.

Appendix A - Student Practice Sheets 91

Appendix B - Practice Problem Answer Key 119

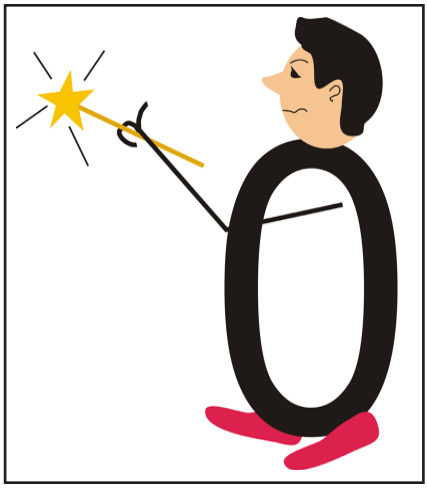
Zeroman waves his wand



Zeroman

1 ZEROMAN & MR. 10 STIR THINGS UP

ZEROMAN WAVES HIS WAND:



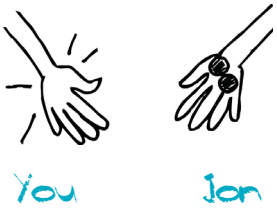
Zeroman is a really fun guy. His name means "none," but he can make a 10 out of a 1 or a 50 out of a 5. Zeroman has a magic wand and can turn numbers into zeros with one big POOOSH of his magic wand!

If you see 0 x 2 it means "no 2s." Your 2s just vanished. And if you see 2 x 0 it means you have 2 zeros. You just have zeros which means you have nothing.

Look at this chart! 0 x any number is....Zeroman!

Chart for 0x				
0 x 1 = 0	0 x 2 = 0	0 x 3 = 0	0 x 4 = 0	0 x 5 = 0
0 x 6 = 0	0 x 7 = 0	0 x 8 = 0	0 x 9 = 0	0 x 10 = 0
0 x 11 = 0	0 x 12 = 0			

STORY 1: You, Jon, and Mary are at the store. Mary asks, "How many dimes do you have?" You say, "I have zero dimes." Jon answers, "I have 2 dimes." When you say "I have zero dimes" you are telling Mary you have no dimes at all.



STORY 2: Tom, Jon, and Mary are at the track field. The track is two miles long. Jon ran around the track five times. Mary ran around the track six times. Tom held the watch and timed their run (in other words, Tom just stood there and didn't run at all).

Let's make story 2 into three problems:

Jon ran 5 times around the 2 mile track for a total of 10 miles.	So 5 x 2 = 10.
Mary ran 6 times around the 2 mile track for a total of 6 miles.	So 6 x 2 = 12.
Tom ran 0 times around the 2 mile track for a total of 0 miles.	So 0 x 2 = 0.

HANDS-ON:

Take a scrap sheet of paper.
Write these numbers, one on each line: 5; 71; 125; 26; 86; 42; 12,356; 456; 24; 19.
Now go back and multiply each one by 0. Also do the tactile and kinesthetic activities on page 14 either now or after doing page 9.

PRACTICE PROBLEMS:

Use sheet 1.1 from page 92.

RULE: 0 x any number = 0

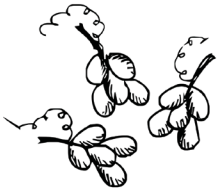
STORY 3: Mr. Ray was making lunches for his three kids. He gave each of them 5 grapes, 1 milk and 0 candy. This is what he gave them:

Grapes x 5
Milk x 1
Candy x 0

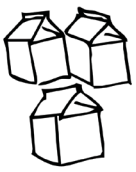
Let's make story 3 into problems:

3 kids x 5 grapes = 15 grapes in all
3 kids x 1 milk = 3 milks in all
3 kids x 0 candy = 0 candy in all

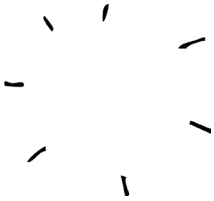
15 grapes shared by 3 kids = 5 grapes each
3 milks shared by 3 kids = 1 milk each
0 candy shared by 3 kids = 0 candy each



grapes



milk



candy

HANDS-ON:

Pretend you are making lunch for 3 kids. Decide what you will give them and draw a picture of the food or use plastic objects to represent parts of the lunches. Next, write problems for the lunches like we did in the example at the top of the page. Use the following for examples of multiplication and division:

MULTIPLICATION:

3 kids x _____ (# of items) = _____ in all.

DIVISION:

_____(# of items) shared between 3 kids = _____ each.

PRACTICE PROBLEMS:

Use sheet 1.2 from page 92.

RULE: 0 ÷ any number = 0