MATH DITTOS 2
Fact Controlled
MULTIPLICATION
for Special Learners

This is the new portfolio version of MATH DITTOS 2: Fact Controlled MULTIPLACTION for Special Learners. The MATH DITTOS 2 series is a unique, fact supported approach to teaching computation. Each page in the series presents a limited number of problems with plenty of workspace. The facts necessary to complete each problem are always presented on the page in a fact reference and practice section.

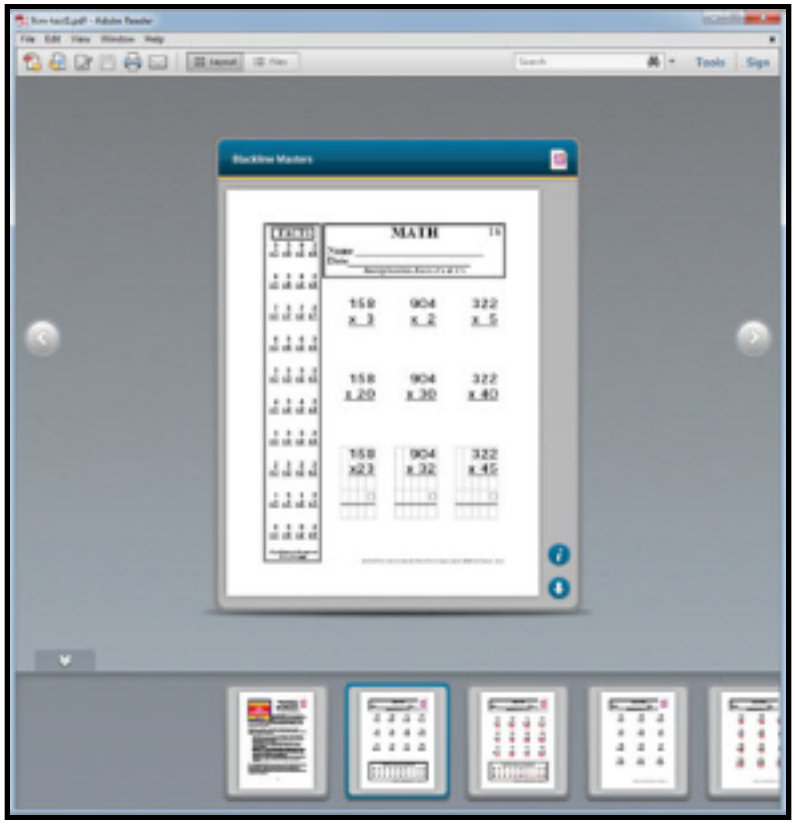
The MD2 series currently consists of three complete and one incomplete "workbook" published as computer documents in the Adobe PDF format, requiring only the free Adobe Reader.

- MATH DITTOS 2: Fact Controlled ADDITION & SUBTRACTION for Special Learners (FCAS) teaches addition and subtraction simultaneously using a unique "cluster" approach.
- MATH DITTOS 2: Fact Controlled MULTIPLICATION for Special Learners (FCM) presents multiplication in a careful, step-by-step, fact supported approach.
- MATH DITTOS 2: Fact Controlled SUBTRACTION for Special Learners (FCS) can be effectively used for initial instruction in subtraction with fact support and word problems. It is quite effective for the reteach that older students beginning long division frequently need.
- MATH DITTOS 2: Fact Controlled **DIVISION** for Special Learners (FCD) is still under development. A few pre-release pages are available for download and may be quite helpful in teaching two- and three-digit divisors.

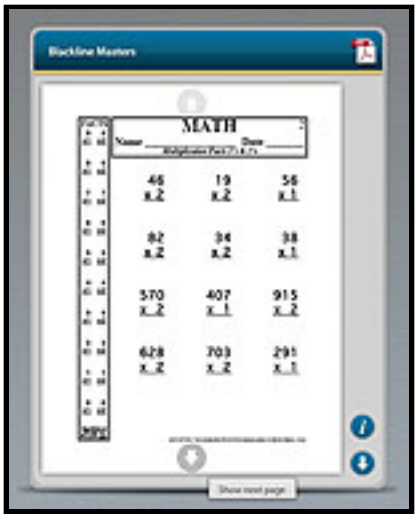
The concept behind the MD2 series is the same one we've used for years in reading, using a controlled "vocabulary." The vocabulary in this context is the basic multiplication facts. Each page is limited to only the facts (much like new vocabulary) presented in the factbar or factstrip. The facts are presented, practiced, and applied to computation.

Navigation

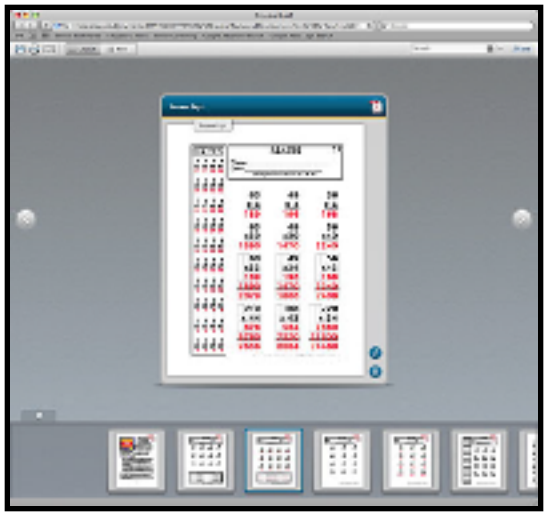
MATH DITTOS 2: Fact Controlled MULTIPLICATION is actualy a series of PDF files rolled into one big PDF. One may browse the different sections by clicking on the different images at the bottom of the screen or using the arrows at the left and right of the screen.



Inside the separate documents, you may browse through their pages with the up or down arrows at the top and bottom of the screen.



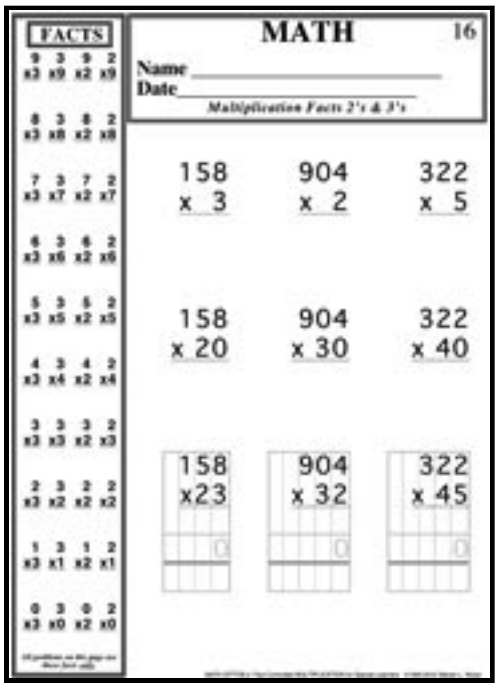
When you find a page you wish to print, you'll need to open the document in Adobe Reader by clicking on the "Open File" link at the upper right of the screen.



Possibly one of the coolest features of Adobe's Portfolios, which I'm still terribly new to, is their ability to open in ones web browser.

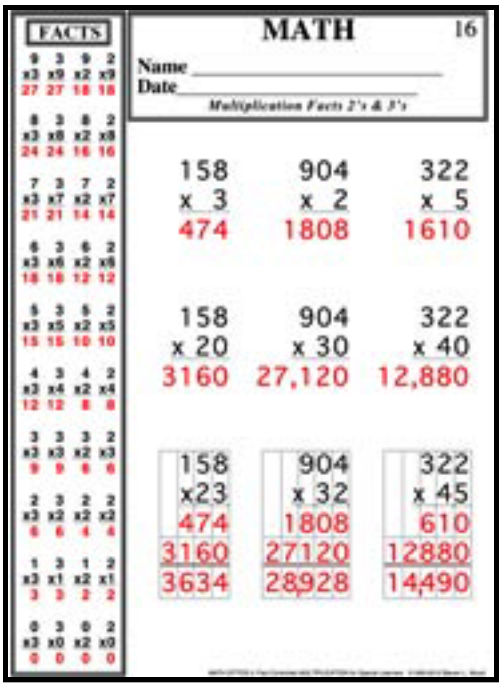
What's Included

Blackline Masters



- 99 blackline masters comprise the basic package. Worksheets move slowly and logically through the steps in multiplication. Each page adds only one new item to the task analysis. Facts are grouped in pairs for instruction, beginning with the 1's and 2's, then the 2's and 3's, the 3's and 4's, and so on. Each fact series is presented initially with one-digit multipliers. Inverse facts are presented on succeeding pages. Two and three-digit multipliers are presented after the first four pages of one-digit practice.

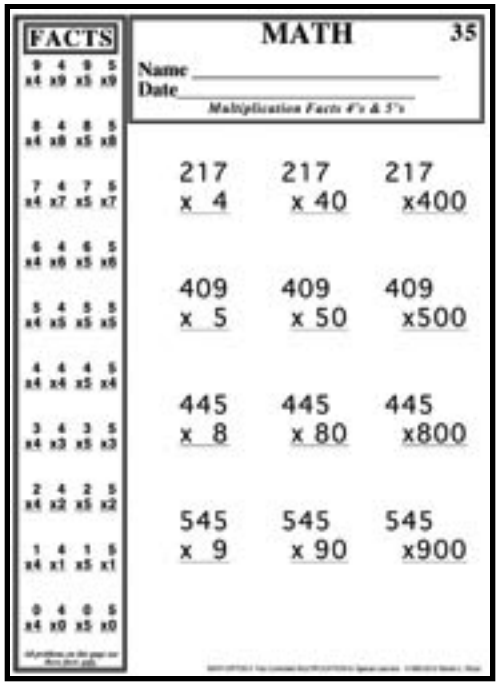
Compete Answer Sheets



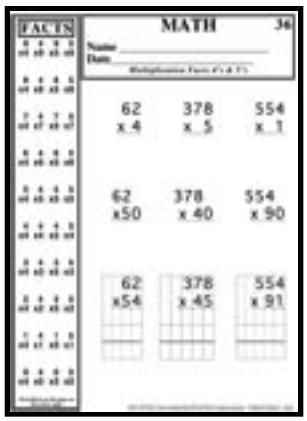
- A set of 99 full-size answer sheets is included. A pet peeve of mine over 40 years of teaching has been the absence of complete answer sheets for multiplication and division worksheets. If publishers would produce complete answer sheets, teachers could do what we've all been trained to do, diagnose and teach. Wherever possible, I have endeavored to incorporate complete answers into the MD2 series.

Students can easily check sub-answers to find where they made a mistake. The sub-answers also facilitate students understanding how to explode a two or three-digit problem into individual problems to be summed for the answer (see graphic at left).

Extras

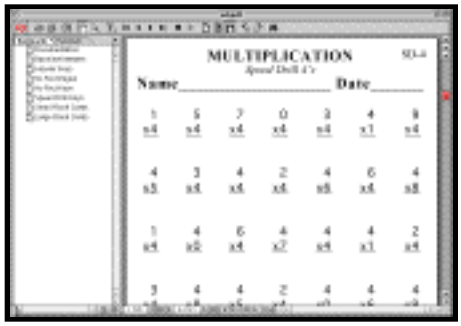


New in this release is the inclusion of some pages I've used for a long time. Often, my students benefit from offset multipliers of 10's and 100's and their multiples (20, 30, 200, 300...). I'd changed the original files for years for the kids without saving them. I finally woke up, saved the files, and am now including them for others to use.



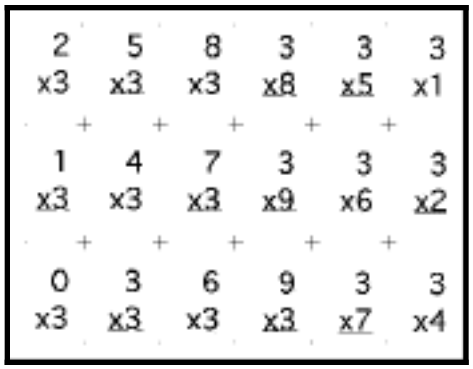
I added gray placekeeping grids for answers in the last release of MULTIPLICATION. I have incorporated them into some of the offset files.

Going the other way, I'd guess that there may be times when you'd rather have your students not use grids. I added a section of "No Grid" pages to fill that need in this release.

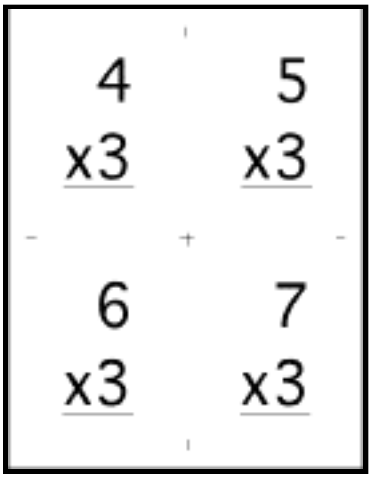


- Speed Drill Worksheets: Twenty-one speed drill worksheets test single facts, fact groups, and cumulative facts (ie. 4's, 3's & 4's, 2's-4's). The speed drill worksheets are designed to follow and reinforce the task analysis followed in Fact Controlled MULTIPLICATION.

- "No Fact" pages: For each fact group , for example the 6's and 7's, there is a page of problems using only the 6's and 7's but no fact bar. A second page then tests cumulative facts to date, 1's through 7's. Fifteen "No Fact" pages are included. I've found these pages to be invaluable for checking to see if we're really doing any good with the kids with this series.



- Small Flashcards: Templates are included for small student flash cards to be printed on 8 1/2 x 11 inch heavy stock. Facts include inverse facts (2x6, 6x2). The cards are sized so that all of one fact set fits on one sheet. There's a bit of the "cute" factor purposely included here. I find that small flashcards, whether math or vocabulary, stand a better chance of making it home with my students than with full-sized cards!



- Large Flashcards: A larger set of templates for printing cards for teacher or student use is included. I generally keep the cards sorted in fact sets and rubber banded on a shelf for student use. I keep other sets at my desk for my use. Printed on cardstock and laminated, the cards have proved durable and appropriately sized for either individual use or group use.

While the small flashcards include both the fact and its inverse (2x6, 6x2), the large flash cards include only the basic facts. One can easily pull the inverses from future card sets.

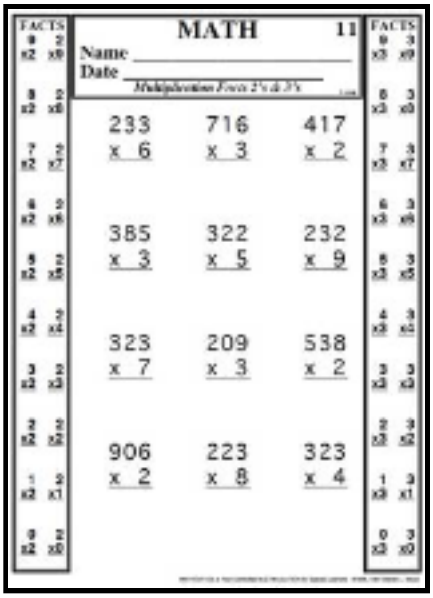
Organization: If you chart FCM, here's what it currently looks like.

Facts	**One-digit** **Multipliers***	**Two & three-digit** **Multipliers**	**Review** includes no fact (NF) pages	**Alternate Pages** offsets
1's & 2's	1, 2, 3, 4	5, 6, 7, 8	NF1	5A, 6A, 7A, 8A
2's & 3's	9, 10, 11, 12	13, 14, 15, 16, 17	18, NF2, NF3	13A, 14A, 15A, 16A
3's & 4's	19, 20, 21, 22	23, 24, 25, 26, 27	28, 29, NF4, NF5	23A, 24A, 25A, 26A
4's & 5's	30, 31, 32, 33	34, 35, 36, 37, 38, 39, 40	41, 42, NF6, NF7	34A, 35A, 36A, 37A, 39A
5's & 6's	43, 44, 45, 46	47, 48, 49, 50, 51, 52, 53	54, 55, NF8, NF9	47A, 48A, 49A, 50A
6's & 7's	56, 57, 58, 59	60, 61, 62, 63, 64, 65, 66	67, 68, NF10, NF11	60A, 61A, 62A, 63A, 65A
7's & 8's	69, 70, 71, 72	73, 74, 75, 76, 77, 78, 79	80, 81, 82, 83, NF12, NF13	73A, 74A, 75A, 78A
8's & 9's	84, 85, 86, 87	88, 89, 90, 91, 92, 93, 94, 95	96, 97, 98, 99, NF14, NF15	88A, 89A, 90A, 91A, 93A

*One-digit multipliers may be used independently of, or with, the two and three-digit multiplier pages.

Use

Pre-teaching each page is fairly easy. A quick examination of the page in question usually reveals what is new.



Each blackline master page contains fact bars to be completed and checked first. They may then be effectively used for reference while completing the practice problems. Facts are presented from the 1's up to the 9's. Each series of pages presents only 2 sets of the facts (ie., 2's and 3's, or 7's and 8's), so that there is only one "new" set of facts and one review set per page.

The small flashcard sets are correlated to be used with the appropriate blackline worksheets in FCM.

Review pages may contain several sets of facts, including the 2 most recently taught fact sets. Inverse facts (ie., 2x6, 6x2) are included in the fact progression. Besides avoiding teaching each fact separately, this approach leaves fewer and fewer new facts to be learned as the student progresses through the book and into increasingly difficult computation.

Use of the "No Fact" pages at the end of each fact section has greatly increased my students' mastery of both facts and computation.

The "Speed Drill" pages also provide fact practice independent of problem computation. I won't recommend a time limit for the speed drill pages, as that is going to vary with the abilities of the students involved. I've had more success timing students when completing speed drill pages, giving them their time, and having them keep a record of their times. Generally, the kids work to decrease their time without external motivators, although we're quick to resort to all sorts of edible and non-edible reinforcers when needed.

FACTS

9	3
x3	x9
8	3
x3	x8
7	3
x3	x7
6	3
x3	x6
5	3
x3	x5
4	3
x3	x4
3	3
x3	x3
2	3
x3	x2
1	3
x3	x1
0	3
x3	x0

The blackline masters in MATH DITTOS 2: Fact Controlled MULTIPLICATION for Special Learners are designed to be used sequentially, if appropriate, 1-99. Using just the one-digit pages (the first four pages of each fact set) is also an effective approach for students not yet ready for the complexities of 2 and 3-digit multipliers.

The pages in this series are purposely limited to very few problems per page. This was done so that students with ADHD could tolerate and complete a daily assignment. Many of my non-ADHD students zip through several pages a day.

More advanced students may not need to complete every page. It can actually slow them down. When I feel a child is "ready," I'm pretty quick to abandon the MATH DITTOS 2 series in favor of the basal math series.

More than anything else, use your good judgment in using MATH DITTOS 2: Fact Controlled MULTIPLICATION for Special Learners with your students.

Disclaimer

No warranties are made with this product. If it blows your machine, printer, or mind, you’re on your own.

Some personal observations

These materials were originally created when I began teaching special education in 1994. After years of teaching mostly regular education, I took a special education position in my school for a change-of-pace/new challenge. I had no money to purchase appropriate materials, few supplies, a hostile principal, and what my kids needed simply didn't exist on the market anyway. These pages are the result of that experience.

The series is designed to give fact support and to present just a few practice problems so that students won't be overwhelmed by the usual page of 25-30 itty-bitty problems with no work space. At times the series may be used with little initial instruction. It was designed to give achievable, meaningful practice/seatwork for students after direct instruction had taken place. The old truism of "Teach, Practice, and Apply" holds true here. I find when my kids performance falls off, I have often forgotten the "Teach" part and have gone directly to "Practice!"

I'm now fully retired from teaching, although I haven't updated some of the statements above to reflect that fact. Besides herding all my wife's "cat and dog resuces." I currently publish the Senior Gardening website.

http://www.senior-gardening.com

Legal Stuff

(Otherwise known as a software license!)

The MATH DITTOS 2 series of fact controlled worksheets became freewares as of January 1, 2010. The entire series continues to be protected under U.S. Copyright registration, but users may download, print, and use these materials without charge. This PDF distribution may be freely copied and distributed in its original form with all accompanying documentation to others as long as no fee is charged. Beyond teachers (and homeschoolers) using these materials for classroom instruction, all other rights to the series are retained by the author.

While no payment is required for use of these materials, clicking through one of my affiliate advertisers when you plan to buy something online will help support this series and would be much appreciated.

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Contact

Questions and comments can be emailed to me at:
swood@mathdittos2.com

The MATH DITTOS 2 series is available at:
http://www.mathdittos2.com/

The original versions of the first three MATH DITTOS 2 workbooks were written on a 33 MHz Macintosh Performa 575. It sported a 13" screen and a whopping 36 MB of RAM! This release was prepared using System 8.1 under the freeware emulator, Sheepshaver, and assembled under OS X Snow Leopard on a Mac Mini.

6/28/2012