

## DO THE MATH TEACHER GUIDE SAMPLER

## MULTIPLICATION

This Sampler includes select pages from the Multiplication Teacher Guide You'll see a sample of the:
© ${ }^{3}$ Section Overview
© Instructional Principals
(3) Letter from Marilyn Burns
© Planner
(8) Lessons
(3) Annotated WorkSpace
© Show What You Know, Objectives Tracker Community News




Help At-Risk and Struggling Students Succeed in Math
Research shows that students with diverse needs succeed in learning mathematics through explicit, intentional teaching based on proven instructional strategies.

TEACHING FOR UNDERSTANDING
Students benefit from instruction based on teaching for understanding. Step-by-step lessons help students develop understanding, learn mathematical skills, se relationships, and make connections.

- Learning experiences link concepts and skills to their mathematical representations and language.
Students use concrete and pictorial models to build a strong foundation in key mathematical concepts, operations, and strategies.
scafFolded content
Scaffolding of the content makes the mathematics more accessible to students.
Do The Math focuses on key content in mathematics so that students are not overwhelmed with extraneous materia
- The content is organized into manageable chunks.
The lessons are explicit about the relationships among these chunks.
- The instruction is carefully sequenced to help students build a solid foundation of understanding.
[遈 MULTIPLICATION MODELS

- Hands-on manipulatives give students concrete experiences with abstract ideas.
- The digital mTools give students the opportunity to translate concrete manipulative pictorial representations.
- Classroom and digital partner games offer engaging experiences that reinforce mathematical understandings and skills. 苗

Children's literature provides a springboard for instruction.
Contexts make abstract mathematical ideas accessible.

MATHEMATICAL THINKING
These standards help develop mathematical expertise and habits of mind in all students.

- Students persevere and solve problems and look for entry points to solutions.
Students reason abstractly to make sens of quantities and their relationships in problem situations.
Students use stated assumptions, definitions, and previously established results to construct viable arguments.

Students model with mathematics to solv real-world and mathematical problems. - Students apply mathematical and practical tools strategically when solving problems.
Students attend to precision, using mathematical language to communicate clearly and accurately.

- Students look closely to discern patterns or structure when solving problems. general methods and shortcuts.

Instructional Principles (continued)
Help Students Build Their
Mathematical Reasoning

## CLASSROOM ROUTINES

Routines such as "think, pair, share" promote engagement and deepen student understanding.

$$
\begin{aligned}
& \text { THNK } \\
& \text { Students collect their thoughts individually. } \\
& \text { PAIR } \\
& \text { Students discuss with a partner. } \\
& \hline \text { SHARE } \\
& \begin{array}{c}
\text { Students report ideas to the whole group. } \\
\text { Expressing ideas and eearinother perspectives } \\
\text { help students clarity their thinking. }
\end{array}
\end{aligned}
$$

- The listening and speaking that occur during "think, pair, share" are especially valuable for English language learners.
- Teachers can pair English language learners with other students who speak the same first language to allow them to discuss concepts.
- Teachers can also pair a student with early English skills and a student with strong English skills to encourage language development.


## INDEPENDENT STUDENT WORK

Assignments provide students with opportunities to practice, strengthen, and extend their learning.

- WorkSpace ${ }^{\ominus}$ assignments are
carefully constructed to motivate students and maximize their success through games, assignments for reinforcement, and
problem-solving situations.
- The digital experience gives students the Tlexibility to explore mathematical tools and games within and outside the classroom.



## Vocabulary and language

Explicit vocabulary instruction helps students communicate effectively about the math they are learning. Vocabulary is introduced after students experience concepts. Vocabulary lessons follow a consistent routine-the teacher writes the vocabulary on the Math Vocabulary chart and
provides an example; students see, hear say provides an example; students see, hear, say,
and write it; the vocabulary is then incorporated throughout the lessons to support students' learning.

- Key mathematical and academic vocabulary is highlighted at the start of each lesson, and Spanish translations are provided.
A glossary in the WorkSpace® provides students with a reference for definitions.


ASSESSMENT AND DIFFERENTIATION
Ongoing assessment is built into the program to help teachers meet individual student needs.
During lessons, teachers observe students During lessons, teachers observe students
working in the whole group, with partners, and independently.

- Specific guidance for how to promote understanding and address student misconceptions is integrated into all lessons. - Suggestions for differentiating instruction are included after every "Assessing Student Understanding" lesson, both for students who need additional help and those who are ready for a challenge.



## FROM MARILYN BURNS

In Lessons 1-5
students...

- Calculate products with
factors 0 through 12 .

Represent arrangements
of equal rows an
rectangles with
multiplication equations.

- Use the Commutative
-Use the Commutative
Property of Multiplication to solve problems.
Communicate ideas with key math vocabulary: multiplication equation, factor, and product.


## Dear Colleague,

Me Multiplication Chart is a mathematical icon in the plenary grades, The Multiplication Multiplication facts is both a rite of passage for students and learning the multiplication facts success. Students typically are and a gatekeeper for their continued success. Sher in their study of multiplication. introduced to the Multiplication thar e chert to find the products of factors While they learn early on how to use the chaltiplication Chart was created. through 12 , most have not learned what multiplication means is fragile, Also, for many, their understanding of who mysterious.
thus making the Multiplication Coning of multiplication by In these lessons, students first focus on wal rows to multiplication equations. connecting arrangements of tiles in equal

$4 \times 5=20$

Students practice finding the total number of tiles arranged in equal row and writing multiplication equations to represent them with the game


## $\square \square \square \square \square$ ■■■■■

Students review the vocabulary factor and product and
how to use the Multiplication Chart to check their answers.
les on grid pa rn to record the arrangements of equal rows of
.

$$
\begin{array}{|c|c|c|c|c|c|c|c|}
\hline X & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline 1 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline 2 & 2 & 4 & 6 & 8 & 10 & 12 & 14 \\
\hline 3 & 3 & 6 & 9 & 12 & 15 & 18 & 21 \\
\hline 4 & 4 & 8 & 12 & 16 & 20 & 24 & 28 \\
\hline 5 & 5 & 10 & 15 & 20 & 25 & 30 & 35 \\
\hline
\end{array}
$$

These experiences prepare students
for exploring patterns on the
Multiplication Chart and learning
Multiplication Chart and learning
to relate the number of squares in
rectangles to products on the chart.


66 Learning the multiplication facts is both a rite of passage for students and a gatekeeper for their continued success.







Note the progress of each student in the appropriate rows on
guide．
Re－evaluating Student Placement
As you review each student＇s work from these four lessons and the assessment，you may suspect
that a student does not have the foundations he or she needs to be successful in this module．You can use the End－of－Modulu Assessment from Do The Math $m$ ：Multipliciction $A$ to find out if the
student has the necessary prerequisite skills．If the student does not score 80\％on this assessment， or struggles to complete it，he or she will need additional guidance．Module A A ad
prerequisite concepts and skills．

Differentiating Instruction Although the lessons are carefully scaffolded and
paced at a rate more likely to give students a paced at a rate more likely to ogive students a
chance for optimal learning，there will be instanc when students are still struggling and need extra
support Also there will he instances when support．Also，there will be instances when
students would benefit from additional challenges students would benentit from add ditional cha
or practice．Try the teaching ideas below．

## For Students Who Need More Support

－Provide one－on－one additional practice for students to help remember the products．
－Have students locate the product on the Multiplication Chart
－Doing this when there is a minute or two of extra time provides students with more opportunity to hear and say factors and products．
－Play the game Tiles Capture with students to help use
strategies for finding strategies for finding product
multipication language．因
－There are 4 rows with 3 tiles in each row．
－There are 4 equal groups with 3 in each group．
－there are 4 equal groups of 3 tilies is 4 times 3 tiles．
－Game instructions are avaiable in the Teacher Bookcase， as well as on the Do The Math digital resources．目

## for Students Ready for a Challenge

－Have students play the game Tap It．©图 －Game directions are available from the Mutipilication
－Game directions are avaliable from the Mutitilication
B game cariation notes on the Do The Math digital
resources．
－Provide students with different numbers of tiles to build more rectangles．
－Choose composite numbers of tiles such as 8,9 ，or 14 ．
－Building the rectangles－and writing the related equations－reinforces the idea that the number of tiles
used to form a rectangle is the product of the number rows and the number of filis in eachuct of －It also reinforces the connection between the number of －It also reinforces the connection between the number
tiles and the product on the Multiplication Chart tiles and the product on the Multipicication Chat

Students complete＂Show What You Know＂assignments every fifth
lesson．These assignments help you monitor student progress and asse understanding of the concepts and skills from the previous four lessons．

## Show What You Know



## Here is an example with 8 tile



Aome Note：Vour child draws rectangles and writes equations for them

Write Products and Factors
DIRECTIONS
> Write the products.
> You may use the Multiplication Chart to find or check your answers.

| $X$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | 1 |  |  | 4 | 5 | 6 |  | 8 |  |  |  |  |


| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | 2 |  |  |  |  |  |  |  |  |  |  |  |

$\begin{array}{lllllllllllllll}2 & 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 & 20 & 22 & 24\end{array}$
$\begin{array}{llllllllllllll}3 & 3 & 6 & 9 & 12 & 15 & 18 & 21 & 24 & 27 & 30 & 33 & 36\end{array}$
$\begin{array}{llllllllllllll}4 & 4 & 8 & 12 & 16 & 20 & 24 & 28 & 32 & 36 & 40 & 44 & 48\end{array}$
$\begin{array}{llllllllllllll}5 & 5 & 10 & 15 & 20 & 25 & 30 & 35 & 40 & 45 & 50 & 55 & 60\end{array}$

| -6 | 6 | 12 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

$\begin{array}{lllllllllllll}7 & 7 & 14 & 21 & 28 & 35 & 42 & 49 & 56 & 63 & 70 & 71 & 84\end{array}$
$\begin{array}{lllllllllllll}8 & 8 & 16 & 24 & 32 & 40 & 48 & 56 & 64 & 72 & 80 & 88 & 96\end{array}$

| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 99 | 108 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 10 | 120 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


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# Do The Math 

Created by Marilyn Burns

| (1) $8 \times 6=48$ | (6) $5 \times 10=50$ | (11) $7 \times 4=\boxed{ }=4$ |
| :--- | :--- | :--- |
| (2) $2 \times 9=18$ (7) $8 \times 8=64$ (12) $10 \times 3=30$ <br> (3) $3 \times 8=24$ (8) $12 \times 10=120$ (13) $9 \times 8=72$ <br> (4) $9 \times 9=81$ (9) $6 \times 6=36$ (144) $6 \times 5=30$ <br> (5) $11 \times 4=44$ (10) $5 \times 3=45$ (15) $2 \times 12=24$ |  |  |

(10) Lesson 5

Home Note: Your child writes productst in equations.

